# The First Man in Space

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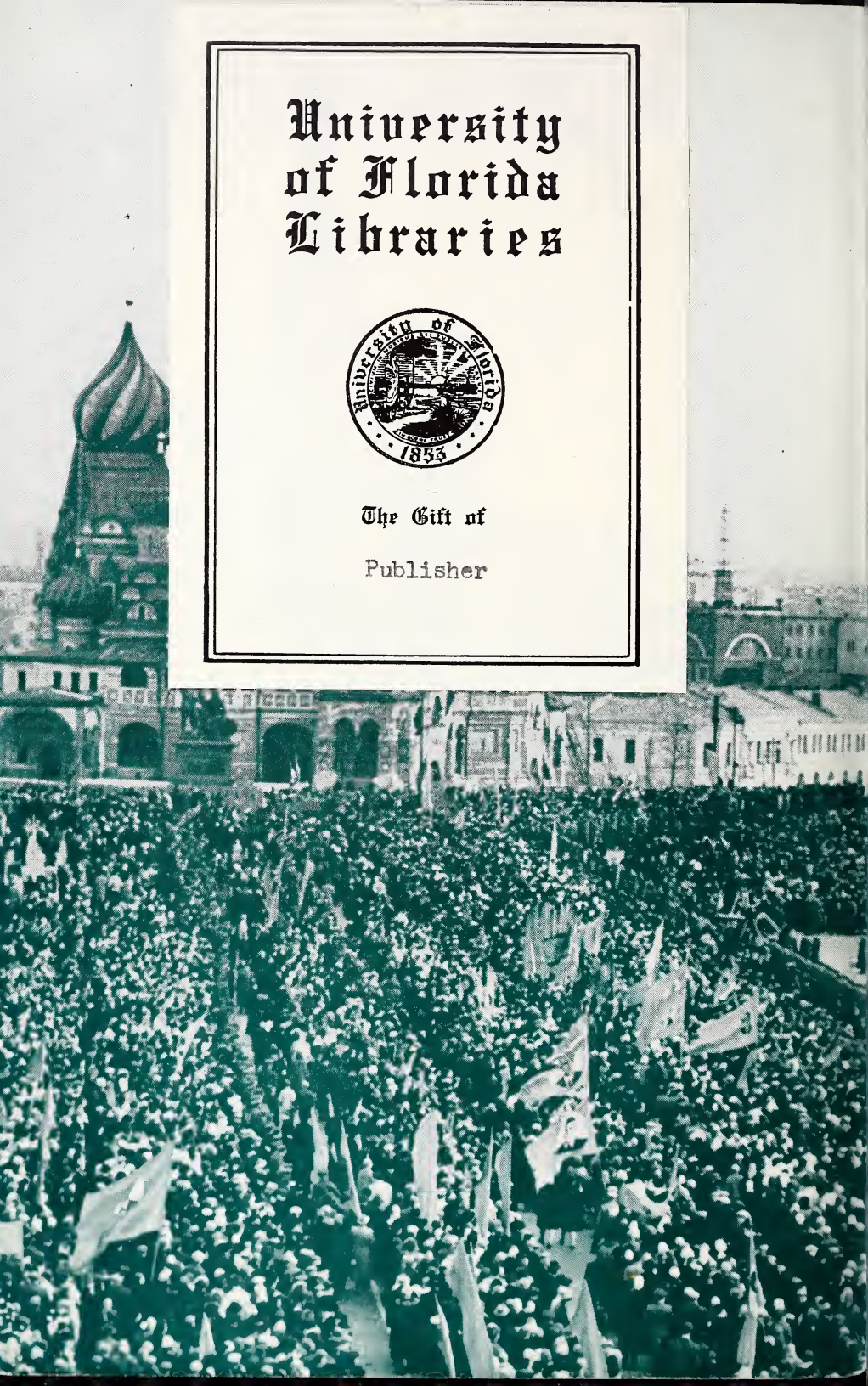

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# *The First Man in Space*

THE RECORD OF YURI GAGARIN'S HISTORIC
FIRST VENTURE INTO COSMIC SPACE

*A Collection of Translations from Soviet Press Reports*

CROSSCURRENTS PRESS INC./NEW YORK

## PUBLISHER'S NOTE

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NEW YORK, 1961

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PRINTED IN U.S.A.

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## INTRODUCTION

April 12, 1961, is a date that will be remembered in the history of science and human endeavor along with the most memorable achievements of all time. On that day, man left the immediate environs of the earth, entered outer space, and took the first big step into a wide realm, the exploration of which had only been dreamed of in the past.

The horizons opened up in physics, chemistry, biology and other sciences are at present incalculable. The main thing is that man has achieved a new vantage point from which to approach many scientific problems that have been faced in the past and, undoubtedly, many new ones yet to be uncovered.

A documentary account of the first human space flight and the immediate reactions to it is therefore of special interest. The first laconic announcement by TASS, the vivid descriptions of the earth and sky by Yuri Gagarin, the unstinting words of praise heaped upon him by his fellow countrymen—this is the material of a great human drama of pioneering, courage, and science. It belongs to everyone, whether he be Russian, American, or any other nationality.

Here then is a collection of translations of Soviet press accounts, some reportorial, some interpretive, some technical and scientific; all a memento of that historic day when the spaceship *Vostok* circumnavigated the globe in outer space.

# THE FIRST MANNED SPACE FLIGHT

## The Announcement

*The historic announcement of man's first flight into space was made to the world by the Soviet news agency* TASS *on April 12, 1961. The text of the announcement appears below as it was broadcast over Radio Moscow.*

On April 12, 1961, the world's first manned spaceship-sputnik *Vostok* (East) was launched in the Soviet Union into orbit around the earth.

The pilot and astronaut of the orbital spaceship *Vostok* is Major Yuri Alexeyevich Gagarin of the Air Force, a citizen of the Union of Soviet Socialist Republics.

The launching of the multi-stage space rocket was successful. After attaining orbital velocity and separating from the last stage of the carrier rocket, the spaceship swung into free flight around the earth.

According to preliminary estimates, its orbital period is 89.1 minutes. The orbit's perigee is 175 km, the apogee 302 km; the orbital plane is inclined at 65° 4′ to the equatorial plane.

The spaceship together with the astronaut weighs a total of 4,725 kg, exclusive of the weight of the carrier rocket's final stage.

Two-way radio communication has been established and is being maintained with Comrade Gagarin, the astronaut. The ship-borne shortwave transmitters operate on 9.019 and 20.006 mc/sec and in the ultra-shortwave range on 143.625 mc/sec. Radiotelemetry and TV observations of the state of the astronaut in flight are being conducted.

Comrade Gagarin, the astronaut, withstood satisfactorily the takeoff and injection into orbit and is now feeling well. The life-supporting systems in the cabin of the spaceship are functioning normally.

The spaceship *Vostok,* carrying the astronaut Comrade Gagarin, continues in orbit.

Dressed for space.

## From the Spaceship *Vostok*

*On Wednesday, April 12, while the flight was still in progress, Radio Moscow broadcast messages radioed back to earth by Major Yuri Gagarin, as well as other details of the flight. This account was also carried in the press on the following day.*

9:52 A.M. MOSCOW TIME

Flying over South America, Major Gagarin, the space pilot, reported from the spaceship *Vostok*: "Flight proceeds normally. Feel well."

10:15 A.M. MOSCOW TIME

Flying over Africa, Major Gagarin reported: "Flight proceeds normally; withstanding weightlessness well."

10:25 A.M. MOSCOW TIME

After the spaceship had flown around the earth in keeping with the prescribed program, the braking rocket was fired, and the space-

ship carrying Major Gagarin began the descent from orbit for a landing in a prearranged area inside the Soviet Union.

After the research and flight program had been completed, the Soviet spaceship *Vostok* landed safely in a prearranged area inside the Soviet Union at 10:55 A.M. Moscow time on April 12, 1961.

When he had landed, Major Gagarin said: "Please report to the Party, the Government and personally to Nikita Sergeyevich Khrushchev that the landing was successful. I feel well and have no injuries or bruises."

## Voice From Outer Space

*In its evening news broadcast at 7:00 P.M., April 12th, Radio Moscow carried tape recordings of the voice of Major Yuri Gagarin, reporting at intervals from the spaceship* VOSTOK *during its flight. Below are some of the things he said.*

"I can see the earth. Visibility is good. Can hear you excellently."

"Flight proceeds well. I can see the earth. Visibility is good.... I can see everything. Some of the space below is overcast with cumuli."

"I am continuing in flight. Everything is normal. Instruments are functioning excellently. Everything is in good order. My flight is progressing."

"Feeling fine. My spirits are high. I am continuing in flight. Everything is going well. The machine is functioning normally."

## Telegram From Khrushchev

*Below is the text of the telegram of congratulations sent by Nikita Sergeyevich Khrushchev to Yuri Alexeyevich Gagarin, April 12, 1961.*

DEAR YURI ALEXEYEVICH:

It gives me great joy to congratulate you warmly upon your spectacular heroic feat, the first space flight aboard the orbital ship *Vostok*.

All Soviet people admire your glorious feat which will be remembered for ages to come as an example of courage, valor and heroism in the service of mankind.

The flight accomplished by you opens a new page in the history of mankind, in the conquest of outer space, and fills the hearts of Soviet people with great joy and pride for their socialist country.

My heartfelt congratulations upon your safe return from space travel to your native soil. Here is a big hug until we meet shortly in Moscow.

N. KHRUSHCHEV

## A Telephone Conversation

*At 1:00 P.M., Moscow time, April 12, Major Gagarin telephoned Chairman Khrushchev at his holiday retreat near Sochi on the Black Sea, to report the success of his flight. Report carried in* Pravda, *April 13.*

KHRUSHCHEV: I am glad to hear you, dear Yuri Alexeyevich.

GAGARIN: I have just received your telegram of greetings in which you congratulate me on the successful completion of the world's first space trip. I cordially thank you, Nikita Sergeyevich. I am happy to report to you that the first space flight was a success.

KHRUSHCHEV: I warmly greet and congratulate you, dear Yuri Alexeyevich! You are the first man in the world to have traveled in space. With your exploit you have glorified our country, and shown courage and heroism in carrying out such an important task. With your exploit you have immortalized yourself as the first person to penetrate into space.

Tell me, Yuri Alexeyevich, how did you feel in flight? How did this first space flight proceed?

GAGARIN: I felt well. The flight was most successful. All the instruments of the spaceship worked faultlessly. During the flight I could see the earth from that great height. I could see the seas, mountains, big cities, rivers and forests.

KHRUSHCHEV: Then you felt well?

GAGARIN: That's right, Nikita Sergeyevich. I felt fine in the spaceship, quite at home. Thank you once again for your kind message of congratulations and for your good wishes on the successful flight.

KHRUSHCHEV: I am glad to hear your voice and to greet you. I shall be happy to meet you in Moscow. You and I, together with our whole people, shall celebrate this great exploit in the conquest

of space. Let the whole world see what our country is capable of, what our great people and our Soviet science can do.

GAGARIN: Let all countries catch up with us now!

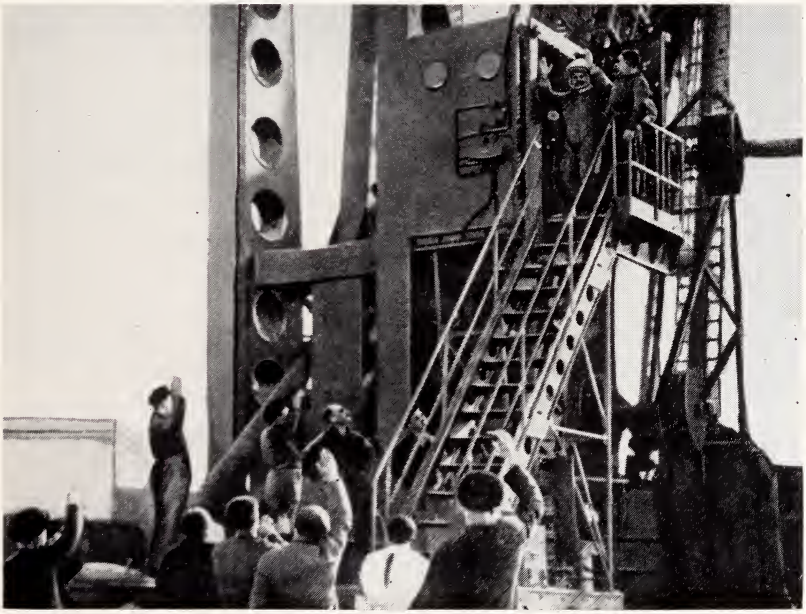
KHRUSHCHEV: Quite right! I am glad to hear your voice sound so cheerful and confident, and to know that you are in such high spirits! You are quite right: let the capitalist countries catch up with our country, which has blazed the trail into outer space and sent up the world's first astronaut. We are all proud of this great victory.

Anastas Ivanovich Mikoyan is here with me. He sends you his congratulations and best wishes.

GAGARIN: Please convey my thanks and best wishes to Anastas Ivanovich!

KHRUSHCHEV: Yuri Alexeyevich, do you have a wife and children?

GAGARIN: Yes, I have a wife, Valentina Ivanovna, and two daughters, Lena and Galya.



Yuri Gagarin before blast-off ready to ascend to his cabin in the spaceship.

Schematic chart of orbit followed by the spaceship *Vostok*. 1. Boost stage; 2. Retarding engine fired; 3. Re-entry stage.

KHRUSHCHEV: And did your wife know that you were going to fly into outer space?

GAGARIN: Yes, she did, Nikita Sergeyevich.

KHRUSHCHEV: Give my best regards to your wife and children. Let your daughters grow up to be proud of their father who performed such a great deed in the name of our Soviet country.

GAGARIN: Thank you, Nikita Sergeyevich. I shall convey your greetings and remember your kind words forever.

KHRUSHCHEV: Are your parents, your mother and father alive? Where are they now and what are they doing?

GAGARIN: My mother and father are alive. They live in the Smolensk Region.

KHRUSHCHEV: Congratulate your father and mother on my behalf. They can be proud of a son who performed such a great exploit.

GAGARIN: Thanks a lot, Nikita Sergeyevich. I'll convey your words to father and mother. They will be happy and grateful to you, to our Party and the Soviet Government.

KHRUSHCHEV: Not only your parents but our entire Soviet country is proud of your great deed, Yuri Alexeyevich. You have performed an exploit which will live through the ages.

I congratulate you once again with all my heart on the successful completion of the first space flight. I wish you all the best. Good-by, till we meet soon in Moscow.

GAGARIN: Thanks, Nikita Sergeyevich. Once again I thank you, our own Communist Party and the Soviet Government for the great trust placed in me. I assure you that I shall always be ready to carry out any assignment given me by our Soviet country. Good-by, dear Nikita Sergeyevich!

## Interview with Yuri Gagarin

*On April 13, Yuri Gagarin gave the following interview to G. Ostroumov, an* Izvestia *correspondent. The interview appeared on April 14.*

QUESTION: How did you feel before boarding the spaceship?

ANSWER: Before boarding the spaceship I felt extremely happy. I was proud to be entrusted with that first space flight. At the same time I realized the great responsibility involved in this flight through space, where so much is unknown. I felt proud of the people who have created the mighty vehicles capable of boosting man into outer space.

QUESTION: What were your thoughts during the flight?

ANSWER: All my thoughts and senses were concentrated on carrying out the flight program. I wanted to fulfil every single item of my task as perfectly as possible. There was a lot of work to do; the whole flight was work.

QUESTION: What were your sensations when the feeling of weight began to disappear after the launching and when it began to reappear?

ANSWER: I felt fine when weightlessness set in. It became easier to do everything. This is natural. Your hands and feet weigh nothing. Things floated in the air. And I myself was no longer seated in my chair as before but floated in the air. I ate and drank during weightlessness and everything was just as it is on earth. I worked and I wrote down my observations. My handwriting was the same although my hand weighed nothing. Only I had to hold down the notebook so that it wouldn't float out from under my hand. I kept up communications through various channels. I used the telegraph key. I found that weightlessness did not affect my working ability in any way. The transition from weightlessness to gravity and the appearance of gravitation were gradual. My hands and feet felt the same as in zero-gravity, only they began to weigh something. And I myself no longer floated above the chair but regained my seat in it.

QUESTION: What did the daylight and night sides of the earth look like? What did the sky, sun, moon and stars look like?

ANSWER: The daylight side of the earth could be seen very well from the height. I could discern the coasts of the continents, islands, big rivers, big reservoirs of water and folds of the relief. Flying over our land I could clearly see the large squares of collective-farm fields and could distinguish between ploughed fields and meadows. I have never before flown higher than 15,000 meters. I could not see as well from the spaceship as from a plane, of course, but still quite well. During the flight I could see for the first time with my own eyes the spherical shape of the earth. That is what it looked like at the horizon. I must say that the horizon presented a unique and exceedingly beautiful sight. There was an unusually colorful transition from the bright surface of the earth to the pitch-black sky with stars in it. The transition was very thin, something like a film girdling the globe. It was of a delicate light-blue color. That transition from blue to black was very gradual and beautiful. It is even hard to describe it in words. And when I emerged from the earth's shadow, the horizon was different. There was a bright orange strip on it which then blended into blue and then into inky black. I did not see the moon. The sun shone tens of times brighter than on earth. The stars could be seen very well: they were bright and clear. The whole picture of the sky showed much greater contrast than it does when we see it from our earth.

Yuri Gagarin before the flight.

QUESTION: Did you feel lonely in outer space?

ANSWER: I felt no loneliness, of course. I knew very well that my friends, the entire Soviet people, were following my space flight. I was sure that the Party and the Government were ready to come to my aid if I were to face any hazards.

QUESTION: Where were you when the first Soviet sputnik was launched; what were you doing; and did you imagine that you would be the first astronaut?

ANSWER: When the first Soviet artificial earth satellite was launched I was completing my course at the Orenburg Air Force school. That day we had come back from training flights on MIGs. Together with my comrades, I felt very proud of that great accomplishment of Soviet science and technology. It was apparent that the day was not far off when man would fly up into space. But I thought it would not be too soon: ten years or so, perhaps. Actually less than four years have passed. Of course, at the time I liked the idea of traveling into space but I never dreamed that I would be the first to ascend aloft in a space vehicle.

QUESTION: What subjects did you like best at school?

ANSWER: I finished six classes at a Gzhatsk secondary school. Then I studied at a Lyubertsy vocational school and later at a technical institute in Saratov. During all those years my favorite subjects were physics and mathematics.

QUESTION: When did you first hear of Tsiolkovsky?

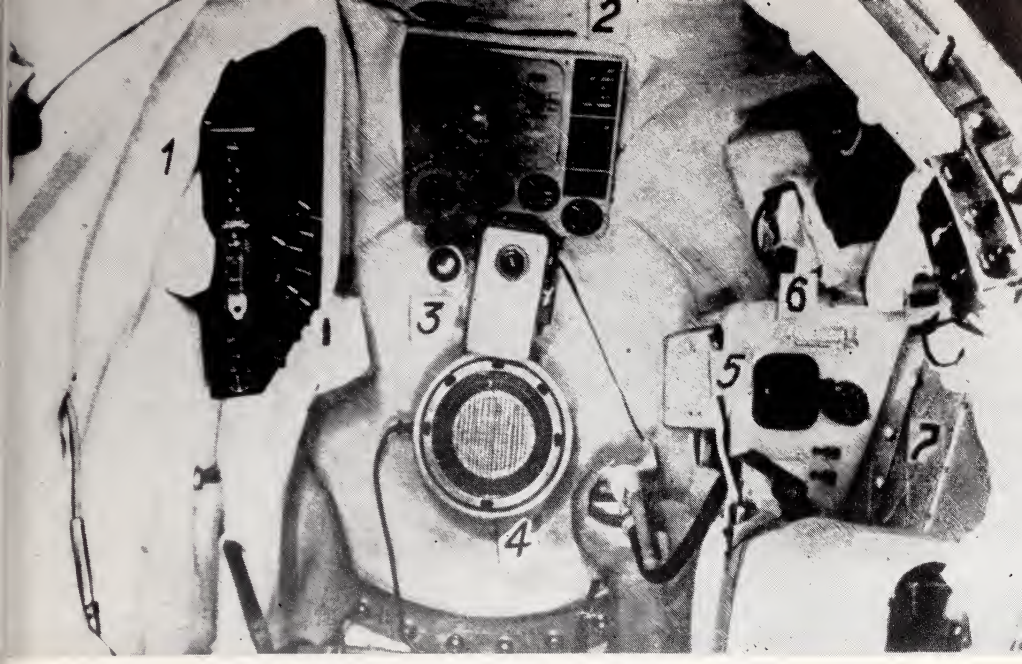
ANSWER: I first heard of Tsiolkovsky in school. When I studied at the technical institute and the Air Force school, his name was very dear to us and we studied his works. I can say that in his book *Beyond the Earth* Tsiolkovsky very clearly forecast everything that I myself saw during my flight. Konstantin Tsiolkovsky imagined the world which would present itself to the eyes of man in outer space as no one else has.

QUESTION: Who is your favorite literary hero and your favorite writer?

ANSWER: I have many favorite writers, both among Soviet authors and the classics. I especially enjoy reading Chekhov, Tolstoy, Pushkin and Polevoi. My favorite literary character from childhood is the hero of Boris Polevoi's *A Story of a Real Man.* I am very sorry never to have had occasion to meet Maresyev. I have read Jules Verne. His books are very interesting, of course, but we see now that reality does not follow his fantasy. I liked the *Andromeda Space Tale* very much but from the point of view of a man who has seen outer space, not everything there is realistic. Still the book is a useful one.

QUESTION: Judging by how you feel, could you have stayed longer in outer space?

ANSWER: I could have stayed much longer in the spaceship. But the duration of my flight was specified in advance by the pro-




Inside view of the pilot's cabin in the *Vostok*. 1. Pilot's control panel; 2. Instrument panel with globe; 3. Television camera; 4. Porthole with optical orientation device; 5. Manual orientation control lever; 6. Radio; 7. Food containers.

gram. I worked well in the vehicle and I felt well and was in high spirits. I am sure I could have stayed up as long as needed for the task.

QUESTION: What was your first feeling when you returned to earth?

ANSWER: It is very difficult to express in words the feelings which overcame me when I set foot on our Soviet soil. First of all I was glad because the task had been successfully carried out. In general all the feelings which swept me were feelings of happiness. During my descent I sang a song: "The country hears, the country knows. . . ."

QUESTION: How did you regard the offer to prepare for space flight?

ANSWER: The desire to travel in space was my personal desire. I wanted to become an astronaut. When this was entrusted to me, I began preparing for the flight. And, as you see, my wish has come true.

QUESTION: Do you go in for sports? What sports do you like?

ANSWER: I like sports and I play basketball more than any other game. In addition I like to ski, skate, and play badminton. Badminton is a good game which takes considerable effort.

QUESTION: What is your favorite occupation?

ANSWER: I like to fly best of all. Up to now I flew planes. I liked this flight into space very much. Can I compare my first flight in a plane with yesterday's flight? It is hard to compare. One flight was in a winged vehicle, the other in a wingless one. The first was at a speed of 150 kilometers an hour, the second at 28,000 kilometers an hour. The altitude of the first flight was 1,500 meters while that of the second was 300 kilometers.

QUESTION: What made you happiest when you returned to earth?

ANSWER: I was very glad to return to earth. Our Soviet people gave me a big welcome. I was moved to tears by Nikita Sergeyevich Khrushchev's telegram. I was moved by his concern, his attention, his warmth. My greatest joy was during my telephone conversation with N. S. Khrushchev and L. I. Brezhnev. My heartfelt gratitude, my filial gratitude goes out to Nikita Sergeyevich for the concern he has shown towards me.

QUESTION: The foreign press reports that the United States also plans to send a man up into space. What comment do you have on this?

ANSWER: Our Party and Government have raised the question of the peaceful use of outer space, of peaceful competition. Of course we shall be glad of the success of American astronauts when they travel up. There is room enough for all in outer space. But that area should be used for peaceful purposes, not for military aims. American astronauts will have to catch up with us. We shall hail their achievements but we shall always try to keep ahead.

QUESTION: What was the most significant event in your life prior to this flight?

ANSWER: In the summer of 1960 I joined the Party. That was the greatest, the most vivid event of my life until this flight into space. I dedicate my flight to our Party, our Government, the 22nd Party Congress, to all the people who are marching in the vanguard of mankind and building a new society.

A view of the spaceship *Vostok* as it took off.

QUESTION: What are your plans for the future? Would you make another flight?

ANSWER: My plans for the future are: I wish to devote my life, my work, my mind and my soul to the new science now concentrated on conquering outer space. I would like to visit Venus and see what is concealed below its clouds, to go to Mars and see for myself whether it has any canals or not. The moon is a fairly close neighbor of ours. I think that we have not long to wait before we fly towards the moon and to the moon.

QUESTION: You know that after the first sputnik was launched thousands of letters came from people asking to be sent up into space. Did you read any of those letters?

ANSWER: Yes, I did read those letters and felt that they were all written from the heart. Of course, I am sorry that none of the letter writers had the chance to make this flight. But I am sure that the time will come when trips around the earth will be organized by trade unions.

QUESTION: Have you any message for your parents and fellow townsmen?

ANSWER: I would like to send my parents and my fellow townsmen greetings and best wishes for success in work and in life.

## ARRIVAL IN MOSCOW

### Welcome in Red Square

*On Friday, April 14th, Major Gagarin was feted in Red Square by the people of Moscow. Report carried in all Soviet papers (abridged).*

On April 14, the Soviet people welcomed their fearless and courageous son, Hero of the Soviet Union, the first space pilot of our planet, Major Yuri Alexeyevich Gagarin.

The whole city rejoiced. The roads and squares were decorated with flags, bright panels and streamers. Portraits of the 27-year-old pilot were held aloft. Everywhere there were flags, banners and flowers. There were queues at the booths selling postcards with portraits of the first cosmonaut.

By mid-day, thousands of people with happy faces filled the streets. Strains of the melodies of favorite songs flowed from the loudspeakers, songs about the homeland, the Party and its heroes which glorified the world's first socialist power. The Soviet people celebrated the great event as a national holiday.

The 33-kilometer road between Vnukovo airport, where the cosmonaut arrived, and Red Square, the center of our capital, seemed to have become the main thoroughfare of our planet. The Columbus of space was to arrive here by plane from the area where the spaceship *Vostok* landed. Although one could get into Vnukovo only by special pass, thousands of Muscovites waited there for the hero for a long time. Along the road, in an endless stream, cars and buses were decorated with colorful flags and garlands. Nearly everybody carried bouquets of flowers.

Gathered at the airfield were representatives of working people, Soviet and foreign public figures, scientists and diplomats. And everyone of them, like the people all over the world, was moved by the unexampled flight of the Soviet cosmonaut.

N.S. Khrushchev arrived at Vnukovo from Sochi by special plane at 12:30 to meet the hero.

An IL-18 plane appeared in the blue sky escorted by seven fighters. Everybody present impatiently waited for the door of the plane to open. At last Yuri Gagarin came down the ladder. He is of medium height and well built. He has a frank and friendly face and a warm smile. He wore a greatcoat with the blue tabs and shoulder-straps of a Major of the Soviet Army. He was promoted to this rank before the space flight. With firm step he walked along the red carpeted path towards the rostrum where leaders of the Communist Party and the Government, and members of his family were gathered. A storm of applause and shouts of *Hurrah* rang out.

On ascending the rostrum Major Gagarin reported to Nikita Sergeyevich Khrushchev the fulfilment of the government's assignment. Khrushchev embraced the cosmonaut paternally, kissed him and led him to his family.

N. S. Khrushchev, Yuri Gagarin and his wife Valentina got into an open blue car decorated with garlands of roses. The motorcade's route lay through broad avenues, lined with people, to Red Square.

There was a veritable sea of banners, slogans and streamers along the motorcade route. And thunderous applause. After the cars passed, the people did not disperse. Everyone wanted to share his thoughts and his impressions with his neighbors.

The people of Moscow did not prepare for today's meeting in advance. The holiday came unexpectedly, and an ordinary working day became a great and unforgettable day. There was not a man on the streets, it seemed, without a flag and a silhouette of a rocket on it, or a band with a portrait of Gagarin. The bright slogans written on paper and bits of material were laconic and jolly: "Let's fly to the Moon!" "Hurrah, Gagarin!" "Glory to the Columbus of space!"

Moscow's Red Square! Many notable pages in the history of our country are bound up with it. Every year military parades, demonstrations of working people and sports parades are arranged there.

The 22-meter space rocket erected in Red Square symbolizes a new era into which man has entered, an era of the conquest of space opened by the genius of the Soviet people.

Motorcade down Lenin Prospekt from Vnukovo Airport to Red Square.

On the granite stands were the guests, workers in factories and mills, prominent agricultural workers, scientists and cultural workers, statesmen and public figures, deputies to the Supreme Soviets of the USSR, the RSFSR and the Union Republics, Marshals of the Soviet Union, generals and officers of the Soviet Army.

Present also were members of the diplomatic corps, public figures from other countries and foreign delegations now in Moscow.

A real human sea flooded the square from the History Museum to the Kremlin's Spassky Tower. This sea glowed and sparkled. Tension grew. Everybody's eyes were fixed on the Mausoleum. The gilt hands of the clock on the Spassky Tower approached 2:30. Stormy applause, shouts of "Hurrah" resounded on the square. This was in honor of L. I. Brezhnev, N. G. Ignatov, F. R. Kozlov, A. N. Kosygin, O. V. Kuusinen, A. I. Mikoyan, D. S. Polyansky, Y. A. Furtseva, N. S. Khrushchev, N. M. Shvernik, V. P. Mzhavanadze and V. V. Grishin ascending the Mausoleum.

Ascending with the leaders of the Party and the Government was the cosmonaut Major Y. A. Gagarin, his wife and parents.

F. R. Kozlov, Secretary of the Central Committee of the CPSU, opened the meeting of Moscow's working people in honor of the great world-historic victory of the Soviet people, the successfully performed world's first space flight of Yuri Alexeyevich Gagarin. F. R. Kozlov, gave the floor to Major Y. A. Gagarin, the world's first cosmonaut. Then the floor was given to Nikita Sergeyevich Khrushchev.

Children with bouquets of flowers ascended the Mausoleum. Olya Prudnikova, a third-grade pupil at School No. 404, walked up to the microphone and said that on the decision of the Central Council of the All-Union Pioneer Organization, Yuri Gagarin had been accepted as an honorary pioneer and entered in the Book of Honor of the pioneer organization. To the accompaniment of stormy applause the girl walked up to the pilot and tied a red tie around his neck.

F. R. Kozlov declared the meeting closed. The National Anthem of the Soviet Union was played. After the meeting a demonstration by Moscow's working people took place and the festive procession lasted over two hours.

## Yuri Gagarin Speaks in Red Square

April 14, 1961

MY DEAR COUNTRYMEN,

DEAR NIKITA SERGEYEVICH,

COMRADES, LEADERS OF THE PARTY AND GOVERNMENT:

First of all allow me to express my sincere gratitude to the Central Committee of my own Communist Party, the Soviet Government, the whole Soviet people, and to you personally, Nikita Sergeyevich, for entrusting me, an ordinary Soviet airman, with the responsible task of carrying out the first flight into outer space.

Before starting out into space my thoughts were with our Leninist Party and our socialist country.

My love for our glorious Party, our Soviet motherland and our heroic working people inspired me and gave me the strength needed to carry out this deed.

The genius and heroic work of our people created the space ship *Vostok,* the most wonderful in the world, and its most ingenious, most reliable equipment. From the launching to the landing I never doubted the successful outcome of the flight into outer space.

I should like to thank our scientists, engineers, technicians, and all Soviet workers from the bottom of my heart for creating a vehicle like this which could confidently penetrate the mysteries of outer space. Allow me also to thank all my comrades and all those who took part in preparing me for my flight.

I am sure that all my fellow space pilots are ready to fly around our planet at any time.

We can state confidently that we shall fly our Soviet space ships on more distant routes. I am boundlessly happy that my beloved Fatherland was the first in the world to penetrate into outer space. The first airplane, the first sputnik, the first spaceship, and the first space flight are all landmarks on my country's great road towards mastery over the mysteries of nature. Our people are being confidently guided to this goal by our own Communist Party.

At every stage of my life, and during my studies at the vocational school, the technical institute, the aviation club, and the

On the way to Red Square.

Air Force school I always felt the concern of the Party whose son I am.

I should especially like, dear comrades, to stress the tremendous fatherly concern for us, ordinary Soviet people, displayed by Nikita Sergeyevich Khrushchev. You, Nikita Sergeyevich, were the very first from whom I received warm congratulations on the successful completion of my flight only a few minutes after landing, after returning from outer space to our native land.

Many thanks to you, dear Nikita Sergeyevich, from me personally and from my fellow space pilots! We have dedicated the first space flight to the 22nd Congress of the Communist Party of the Soviet Union.

Heartfelt thanks to you, dear Muscovites, for your big welcome. I am sure that every one of you is ready to perform any exploit in the name of the might and prosperity of our beloved country under the leadership of the Leninist Party, to the glory of our country, to the glory of our people.

Long live our socialist country!

Long live our great, mighty Soviet people!

Glory to the Communist Party of the Soviet Union and its Leninist Central Committee headed by Nikita Sergeyevich Khrushchev! (*Stormy applause. Cries of "Hurrah!"*)

## Speech by N. S. Khrushchev in Red Square

April 14, 1961

DEAR COMRADES,

DEAR FRIENDS,

CITIZENS OF THE ENTIRE WORLD:

It is with a feeling of great joy and pride that I address you. For the first time in history a man, our Soviet man, in a ship created by Soviet scientists, workers, technicians and engineers, tore away from earth towards outer space and made the first unprecedented trip to the stars.

The spaceship *Vostok* rose to an altitude of more than 300 kilometers, orbited the earth, and successfully landed in a prearranged area of the Soviet Union.

We ardently hail this remarkable cosmonaut, this heroic Soviet man, Yuri Aleveyevich Gagarin. He displayed noble moral traits: courage, self-possession, and valor. He is the first person who for an hour and a half looked at our entire planet, the earth, which is ever in motion, and viewed its tremendous oceans and continents. Yuri Alexeyevich Gagarin is our pioneer in space flights. He is the first to have orbited our globe. If the name of Columbus, who crossed the Atlantic Ocean and discovered America, has lived on through the ages, what can be said about our wonderful hero, Comrade Gagarin, who penetrated into outer space, circled the entire terrestrial globe, and safely returned to earth! His name will be immortal in the history of mankind.

We all understand what a world of thoughts and feelings our first space traveler has brought back to earth. Everyone here in this historic square understands the deep emotion, pride and joy with which we greet you, our dear friend and comrade.

Permit me on behalf of the Central Committee of the Communist Party of the Soviet Union, the Soviet Government, and our entire people to heartily congratulate you and to express our deep gratitude for your unparalleled feat.

Permit me, also, ardently to hail and congratulate the scientists, workers, engineers and technicians who created the rocket ship *Vostok,* and to congratulate all the Soviet people who created the conditions for the successful flight of a manned spaceship into outer space.

We are proud of Yuri Gagarin's feat; we are filled with deep admiration for the scientists, engineers, technicians and workers who devoted their minds and their hearts to the creation of this ship and to its amazing flight. The work and achievements of millions of workers, collective farmers, and intellectuals, of the entire Soviet people are combined in their glorious deeds. With this flight we have once more shown the entire world what the genius of a free people is capable of.

Now, when Soviet science and technics have demonstrated the highest achievement of scientific and technical progress, we cannot help looking back to the history of our country. In our mind's eye we cannot help seeing the years that have passed.

After we overthrew the power of the tsar, the capitalists and the landlords, we defended our state in the fire of civil war even though we were often barefoot and without clothes. How many military strategists there were in those days who predicted the inevitable defeat of, as they put it, the "barefoot armies." Where are these ill-starred strategists today?

When we went to our first Communist subbotniks*, when we laid the foundations for new blast furnaces and built mines, when we hurled at the whole world the winged words: five-year plan, industrialization, electrification, collectivization, country-wide literacy, how many arrogant "theoreticians" there were, who forecast that bast-shoed Russia could never become a great industrial power! Where are these sorry prophets today?

We were no simple Ivans who had no ancestors. We used for the welfare of the people the best that had been created by the most progressive people. The socialist state made it possible for the dreams and plans of many scientists, engineers and technicians to be applied in the wide field of Soviet industrial and collective farm construction. Under the conditions prevailing in tsarist Russia these people could not even think of using their minds and hands.

*The system prevalent in the days following the Revolution, in which workers volunteered to work on free week-ends or days off.

When, today, we stand beside the man who made the first space flight, we cannot help recalling the name of the Russian scientist and revolutionary, Kibalchich, who dreamed of flights to space, but who was executed by the tsarist government. We cannot help recalling and paying due tribute to the memory of Mendeleyev and Zhukovsky, Timiryazev and Pavlov, and to the many other great scientists whose names are associated with the outstanding feats of the Soviet people.

It is with special respect that we recall the name of Konstantin Eduardovich Tsiolkovsky, scientist, dreamer, and theoretician of space flights.

The dream of conquering outer space is indeed the greatest of man's dreams. We are proud that Soviet people have made this dream, this fairy-tale come true.

The words "Citizen of the Soviet Union" are proud words. There was a time when people abroad, and even some people in our country spoke derisively of us. But it was then that Vladimir Mayakovsky said with pride:

"Read. Envy me,
"I am a citizen
"Of the Soviet Union."

With what force these words ring out today. With what profound meaning they are filled!

But we are proud not because we deny other nations and countries the right to perform a similar feat. We are internationalists. Every Soviet person is brought up in the spirit of socialist patriotism, and at the same time he is ready to share freely his scientific wealth, his technical and cultural knowledge with all who are ready to live with us in peace and friendship.

Soviet workers, the collective farm peasantry, and the working intellectuals are proud that to us, the working people of former tsarist Russia, fell the great honor of carrying out the October Socialist Revolution under the guidance of Vladimir Ilyich Lenin, the immortal leader of the working class and the Communist Party.

That was an exploit unparalleled in history. The working class, the people had to display enormous courage and boldness, a profound understanding of their aims and problems in order to perform that exploit. The working class was not daunted by dif-

ficulties, however great. It carried out the greatest revolution and assumed power in a country which was economically backward and almost completely illiterate, in which the people were suppressed by tsarism and capitalism.

And in those circumstances when, it seemed, there was no time to dream of lofty deeds of the present and the future and it was necessary to think how to end the war and heal the wounds which bled on the body of old Russia, the great Lenin with unswerving assurance spoke of the inevitability of the triumph of socialism and communism. He took steps to end the imperialist war through revolution, through the victory of the working class, the establishment of the dictatorship of the proletariat, and the revolutionary liberation of all the people of our country.

Khrushchev and Gagarin atop the Lenin-Stalin Mausoleum respond to an enthusiastic welcome from the crowd in Red Square.

Lenin persistently and tirelessly explained that only when people are completely liberated from capitalist slavery, only when the people are really free, when all material and spiritual abilities and all forces are channelled to the benefit of the working people, will a new era dawn over mankind.

The great exploit of the working class of Russia and the people of our country who carried through the October Socialist Revolution under the Communist Party will go down through the ages as an inspiring example of the revolutionary creative ability of the people.

Socialism has thrown open to our country boundless scope for development. In 43 years of Soviet government formerly illiterate Russia, of which some people spoke disparagingly, regarding it as a barbaric nation, has traveled a magnificent road. Our country was the first to create an orbital spaceship, the first to reach outer space. Is this not a brilliant demonstration of the genuine freedom of the freest of all free people on earth, the Soviet people!

Having created all the conditions for the launching and successful landing of the space vehicle we have shown what a nation is capable of when it becomes genuinely free and unfettered both politically and economically. The truly free countries are not those where the rich freely exploit those who lack bread and call that the "free world," but those countries where all men and women of labor, all peoples have the opportunity to enjoy all material and spiritual benefits.

Our conquest of space is an outstanding milestone in the development of mankind. This victory is another triumph of Lenin's ideas, confirmation of the correctness of the Marxist-Leninist teaching. This triumph of human genius is an embodiment and graphic expression of the glorious results of everything achieved by the peoples of the Soviet Union in the conditions created by the October Socialist Revolution. This exploit marks a new upsurge of our nation in its onward movement towards communism.

With pride and unshakable assurance we declare to the world that, having successfully completed the upbuilding of socialism begun in 1917 by the October Revolution, we are confidently and boldly forging ahead along the road indicated by the great Lenin, towards communism. We say that there is no force in the world capable of diverting us from our course. The victory will be ours,

and it will be the most noble, the most brilliant victory. It will not mean the dominance of one group of people over another, the dominance of one country over another country or group of countries, of one nation over another; it will be to the benefit of all people on earth.

The movement of the peoples towards communism, the noble aspirations of men and women towards that great goal cannot be belittled or retarded. This movement has acquired tremendous invincible force and there exist no obstacles capable of halting that great process of human development. The Soviet people, the socialist nations, the peoples of the whole world, including the peoples of those countries who have not yet gained their victory and are stubbornly struggling for the triumph of progress over exploitation and oppression, will win and erect the lofty edifice of communism. And this will be a great boon to humanity, the pinnacle of its development.

Comrades! On this occasion we hail the scientists of the world to whom the space flight is a cause of great joy and happiness. Soviet science is developing in close connection with the whole of world science.

The flight of the spaceship *Vostok* is, so to speak, the first Soviet swallow in outer space. It soared aloft in the wake of our many sputniks and probes. It represents a natural outcome of the titanic scientific and technological work carried out in our country for space conquest.

We shall continue this work in the future. More and more Soviet people will fly along unexplored routes into outer space and probe the mysteries of nature still further, placing them at the service of man and his well-being, at the service of peace.

We stress: at the service of peace! Soviet people do not want rockets, which fulfil man-made programs with such amazing accuracy, to carry lethal cargoes.

We once again appeal to the governments of the world: science and technology have progressed so enormously and are capable of creating such devastation if subjected to an evil will, that it is necessary to take all possible steps towards disarmament. General and complete disarmament under the strictest international control is the way towards the establishment of a lasting peace among nations.

When we launched our first sputnik some none too clever people in the country on the other side of the ocean refused to believe it. Well, there are such nearsighted and hidebound people. But now we can actually touch a person who has returned to us straight from the sky!

Allow me once again to embrace you, our dear Yuri, and to convey through you our heartfelt greetings to your associates in your work and your exploit. (*Khrushchev embraced Comrade Gagarin and kissed him. Stormy applause swept the square. Cries were heard of: "Long live the Communist Party!" "Glory to Gagarin!" "Hurrah!"*)

You have glorified the Union of Soviet Socialist Republics. The Motherland will never forget your exploit and will preserve your name in the annals of its history.

We are proud that the world's first cosmonaut is a Soviet man. Yuri Alexeyevich grew up and was educated in Soviet schools, he participated actively in public life and was an active Komsomol member. He is a Communist, a member of the great Party of Lenin!

It is a pleasure for me to inform you that the Presidium of the Supreme Soviet of the USSR has awarded you the lofty title of Hero of the Soviet Union.

You are also the first to receive the distinguished title of "Pilot Cosmonaut of the USSR."

A bronze bust of the hero will be set up in Moscow and a special medal will be issued to commemorate the world's first manned space flight.

I warmly congratulate Yuri's parents, Anna Timofeyevna and Alexei Ivanovich Gagarin, on having brought up such a fine son who has glorified our country by his exploit.

I express warm congratulations to Yuri Alexeyevich's wife Valentina Ivanovna, a fine Soviet woman. She knew that Yuri Alexeyevich was departing into outer space but did not dissuade him. On the contrary, she gave her heart's blessing to her husband, the father of two little children, and to his great exploit.

Remember that no one could guarantee completely that the parting with Yuri Alexeyevich before his space flight would not be the last one in his life. Her courage and her realization of the

Embraces exchanged in Red Square.

tremendous importance of that unparalleled flight show the great soul of Valentina Ivanovna.

She is a true Soviet woman. Recall with what warmth and love Nekrasov, Pushkin and our other writers wrote of Russian women. Today, Russian women are all the women of the Soviet Union. Valentina Ivanovna demonstrated her fine character, her will power and her understanding of Soviet patriotism.

Comrades! The people of the Soviet Union are celebrating a new victory, a victory of labor, science and thought. It was achieved by the peoples of our country as a result of stubborn, intense work. Soviet people have traversed a great road of struggle for the progress of the national economy and the development of technology and science and have reaped worthy fruit by gaining priority in the launching of a manned space ship. This immortal exploit, this outstanding deed will live through the centuries as the greatest accomplishment of the human race.

But success should not weaken our will, persistence and effort in further advancing our economy and developing our science and technology. The tasks of creating the firm material and technical base of communism charted by the 21st Communist Party Congress are stupendous. They are of tremendous historic importance. By

fulfilling the Seven-Year Plan and achieving, as a result, a new upsurge of the whole of our economy, science and technology, we shall make it possible to surpass the economic level of the most developed capitalist country, the United States of America, and multiply our superiority in the development of science and technology.

Implementation of the Seven-Year Plan will bring us closer to the time when we shall step beyond the farthest point reached by the capitalist world and shall surge ahead in developing our economy and in satisfying the needs of the people, just as we have now surged ahead into outer space. The material and cultural requirements of Soviet people will be satisfied more fully than those in the most developed countries of the capitalist world.

That is why, comrades, great new accomplishments should not weaken our will, our desire to utilize to the utmost all our potentialities in advancing science and technology. We must place everything at the service of the people so that we may successfully solve the problem of the further development of industry and the whole of the country's economy as put forward by our Party.

The tasks confronting the Communists and Komsomol members of the countryside, the men and women of the collective farms, the workers of the state farms—indeed, everyone engaged in agriculture — are especially great. We must raise agriculture to a level where it will always be abreast of industry.

Spring is a decisive time in agricultural work. In this third year of the Seven-Year Plan we must especially demonstrate our abilities in boosting agriculture. All farm workers must spare no efforts in making agriculture meet to the fullest the growing requirements of the people.

Comrades! There are many wonderful pages in the historic annals of our country. They are inscribed by the work, the inspiration, the talent, the persistence and the courage of millions of Soviet people.

Long live and flourish our wonderful Soviet people, the builders of a new life, the builders of communism!

Long live and flourish our socialist Motherland, the country in which the great October Revolution launched a new era in the development of humanity!

Glory to the great leader and founder of the Communist Party and the socialist Motherland, Vladimir Ilyich Lenin! The genius of Lenin illumines our road to communism, inspires us to new exploits in the name of the peace and happiness of all mankind! Long live the peoples of the Soviet Union, the builders of communism! (*Stormy, prolonged applause. Cries of "Glory!" "Hurrah!"*)

## Reception in the Grand Kremlin Palace

*This report of the Kremlin reception which followed the rally in Red Square appeared in* Pravda, *April 15, 1961 (abridged).*

The Central Committee of the Communist Party of the Soviet Union, the Presidium of the Supreme Soviet of the USSR and the Council of Ministers of the USSR yesterday held a reception in the Grand Kremlin Palace in honor of the outstanding exploit of the scientists, engineers, technicians and workers who had ensured the success of the world's first manned flight into outer space, and in honor of Yuri Alexeyevich Gagarin, the world's first cosmonaut.

Georgiyevsky Hall filled with those who through their intellectual effort and skill had built the spaceship *Vostok*, with the members of the Presidium of the USSR Supreme Soviet, Ministers of the USSR and RSFSR, Chairmen of State Committees, members and alternate members of the Central Committee of the CPSU, Marshals of the Soviet Union, leaders of Party and government organizations of Moscow and Moscow Region, representatives of the working people, eminent scientists, artists and cultural workers, and representatives of public organizations.

Shortly before the beginning of the reception N. S. Khrushchev, Cosmonaut Yuri Gagarin, his wife Valentina, his father and mother entered the Grand Kremlin Palace, and proceeded to Georgiyevsky Hall, where they were greeted with prolonged stormy applause.

The Decrees of the Presidium of the USSR Supreme Soviet conferring on Yuri Gagarin the titles of Hero of the Soviet Union and Pilot-Cosmonaut of the USSR, were read. A thunderous hurrah and stormy applause broke out in the Georgiyevsky Hall and the orchestra played a march.

Presenting the Order of Lenin and the Gold Star Medal of the Hero of the Soviet Union to Yuri Gagarin, L. I. Brezhnev pointed out that Gagarin had accomplished an extraordinary exploit and that this exploit was a symbol of all the great accomplishments of the Soviet people.

He pinned the Order of Lenin and the Gold Star Medal to the tunic of the world's first pilot-cosmonaut. The President of the USSR Supreme Soviet then embraced and kissed Yuri Gagarin. This again drew prolonged applause from the gathering.

"I am infinitely touched by the attention of our Party, our Government and all the Soviet people," Yuri Gagarin said, speaking in reply. "I am proud of what I did for the glory of the Soviet people."

N. S. Khrushchev, L. I. Brezhnev, F. R. Kozlov, K. Y. Voroshilov and R. Y. Malinovsky were photographed with the hero-cosmonaut, his wife, mother, father, sister and brothers.

The gathering was addressed by N. S. Khrushchev. The head of the Soviet government expressed his conviction that the time of interplanetary travel was not far off. He proposed a toast to the triumph of human reason and genius, to Yuri Gagarin, the first pilot-cosmonaut, to the scientists, engineers, technicians, workers, thanks to whose efforts the spaceship had been built, successfully launched and safely returned to the earth.

The Swedish Ambassador Rolf Sohlman, the dean of the diplomatic corps, sincerely congratulated N. S. Khrushchev, Chairman of the Council of Ministers, and the whole Soviet people on the tremendous achievement of Soviet science and technology. He said that the day when the first manned space flight was accomplished was a historic day for the whole of mankind. Major Gagarin's name will be forever associated with mankind's discovery of a path into interplanetary space, to other worlds, he continued. The Swedish Ambassador stressed that the first flight into outer space was the beginning of a new era in the development of mankind.

Yuri Gagarin and those who created the orbital spaceship *Vostok* were greeted on behalf of the workers of Moscow by fitter N. M. Kuzmin of the Krasny Proletari Works, on behalf of the collective farmers of Moscow Region by Hero of Socialist Labor V. F. Lyukshin, chairman of the Stalin Collective Farm, Voskresensk

District, on behalf of the youth of the Soviet capital by Valentina Petrishcheva, the leader of a communist work team of the Frunze Mill, and on behalf of the intelligentsia by writer Leonid Sobolev. Chief Air Marshal K. A. Vershinin, welcoming the hero-cosmonaut said: "We are proud of our glorious soldier who has accomplished a great historic mission."

All the speeches were interrupted by stormy ovations through the entire hall.

A concert by the most distinguished artists in the Soviet capital was given for the participants in the reception, which was marked by an exceptionally warm, cordial and fraternal atmosphere.

## Press Conference at the Scientists Club

*Thousands of Soviet and foreign journalists, scientists, diplomats and others attended the first press conference given by Major Gagarin and a group of prominent scientists connected with his space flight. When Major Gagarin entered the hall, he was given a standing ovation. The statements that follow, plus the text of the question-and-answer session, appeared in Soviet newspapers on Sunday, April 16.*

The press conference was opened by Academician A. N. Nesmeyanov, President of the USSR Academy of Sciences.

### Statement by Academician A. N. Nesmeyanov*

The Soviet Union placed history's first manned spaceship *Vostok*, piloted by Yuri Alexeyevich Gagarin, in orbit around the earth on April 12, 1961.

It happened in the morning. The space vehicle entered an orbit with a perigee of 175 km and an apogee of 302 km above the surface of the earth. Its orbital period was 89.1 minutes. The vehicle weighed, together with the cosmonaut, 4,725 kg.

The spaceship was equipped with everything necessary for the cosmonaut's safe flight and return to earth. Many systems of

*Alexander Nikolayevich Nesmeyanov was born in 1899 and is an organic chemist. He was elected President of the Academy of Sciences of the USSR in 1959 and also serves as Director of the Institute of the Fusion of Organic Elements.

the vehicle were duplicated. It carried instruments enabling the pilot to determine his position in orbit at any moment.

Constant two-way radio communications were maintained with the pilot both prior to the take-off and during the flight.

I must stress the exceptional courage, grit, and will power of Yuri Alexeyevich Gagarin. He slept soundly the night before the flight, just as the doctors had prescribed, and was awakened several hours before the flight. His heartbeat was 70-75 per minute during the entire preparation period and after the rocket's take-off. He joked, and his high spirits strengthened everyone's confidence in the success of the flight.

When he was told that the signal was about to be given for starting the rocket motors he exclaimed cheerfully, "Well, up we go!"

During the boost stage, when the powerful rocket motors were working and he felt the full impact of the high loads, vibration and noise—even in that tense stage of the flight Yuri Aleveyevich Gagarin continuously reported all the necessary information both about his own state and about the work of the systems in the spaceship cabin. When he emerged from the dense layers of the atmosphere and saw the earth he reported, "What a beautiful sight!"

Later, during the whole flight Yuri Alexeyevich maintained constant contact with the earth. Passing over South America at 9:52 he reported, "Flight proceeding normally. Feeling well." At 10:15, passing over Africa, Yuri Alexeyevich reported, "Withstanding weightlessness well."

The spaceship's retro-rockets were switched on at 10:25 and the vehicle together with its pilot Major Gagarin, began to descend from its orbit to land in a predesignated area. At 10:55 the Soviet spaceship *Vostok* landed safely.

Thus a matchless feat was performed and a new brilliant page inscribed in the history of human civilization. This is a feat of the Soviet people guided by our Communist Party and Soviet government. This is a feat of large collectives of scientists, designers, engineers, technicians and workers, a feat of all the test workers who ensured the faultless preparation and launching of the spaceship, a feat of all the services which ensured the normal flight and landing of the vehicle. This is a feat of the brave son of the Soviet

land, Yuri Alexeyevich Gagarin. His name has already become a legend.

Everything in this feat is symbolic: the fact that the first space traveler is a Soviet man, the fact that the first space vehicle aboard which Yuri Alexeyevich Gagarin made his flight was called *Vostok* (East), and the fact that the flight took place in the morning. That morning became the morning of a new era.

From now on and forever, the day of April 12, 1961 will be associated with the exploit performed by Yuri Alexeyevich Gagarin. The flight around the earth lasted 108 minutes, and those minutes shook the world.

Human civilization has a long, fabulously wonderful history. Every exploit in it, whether it was the creation of the first symbols of writing or the creation of the first steam engines or the first circumnavigation of the globe, was a milestone marking man's ascent to a new level and the assertion of the force of progress and creation. Not all of these exploits were recognized at once. The old waged a stubborn fight against the new, and the more revolutionary the event blazing the trail into the future, the fiercer was the opposition of the past.

On the threshold of the twentieth century, Tsiolkovsky, his genius unrecognized, for the first time showed mankind the road to the stars. His works contained the scientific fundamentals of cosmonautics, a science a brilliant triumph of which we are marking today.

The words of Konstantin Eduardovich Tsiolkovsky, "The earth is the cradle of thought, but we cannot remain forever in our cradle," have come true.

Yuri Alexeyevich Gagarin, the first space pilot, went through an extended, strenuous course of training. It was an unusual, profoundly scientific system of training, which gave the space pilot the necessary technological knowledge connected with the design of the spaceship and its systems, knowledge in astronomy, geophysics, biology and other sciences.

The space pilot was subjected to great strains in special centrifugal machines and vibration stands. Tests in airtight cabins completely duplicating a spaceship's cabin lasted for days and weeks. The landing system was perfected.

Leonid Brezhnev, President of the USSR Supreme Soviet, presenting Major Yuri Gagarin with the Order of Lenin and the Gold Star of Hero of the Soviet Union.

All this tremendous work culminated in the first space flight in history.

DEAR YURI ALEXEYEVICH,

On behalf of the Presidium of the Academy of Sciences of the USSR I hail you, a wonderful Soviet man, the Columbus of outer space. (*Standing ovation to Gagarin.*)

Centuries will pass. But your name will always remind people of the great exploit performed by Soviet scientists and designers and by you personally — the exploit of the first manned flight in outer space.

You have shown all mankind an example of courage, valor and heroism in the service of mankind!

Academician A. N. Nesmeyanov presented Major Gagarin with the Tsiolkovsky gold medal, awarded to the hero by the Presidium of the USSR Academy of Sciences for carrying out the world's first space flight on the spaceship *Vostok*. He then gave the floor to Major Gagarin.

### Statement by Yuri A. Gagarin

DEAR COMRADES; ESTEEMED GUESTS:

Many people are interested in my biography. I have read in the papers that some idle persons in the United States, distant relatives of the Princes Gagarin, claim that I am some kinsman of theirs. I must disappoint them. I think they were fooling. I am an ordinary Soviet person. I was born on March 9, 1934, to the family of a collective farmer. My birthplace is Smolensk Region. I have no princes in my genealogy. My parents were poor peasants before the Revolution. The elder generation of my family, my grandfather and grandmother, were also poor peasants and there were never any princes in our family. So I must disappoint my self-styled relatives in America.

I studied at primary school, then at a trade school in Lyubertsy, Moscow Region. Then I entered a foundry technical school in Saratov. But my cherished dream was to become a flier. When I finished the technical school in 1955 I simultaneously finished the Saratov aviation club. After that I was accepted at the Orenburg Air Force School from which I graduated in 1957 with the qualification of fighter pilot. I served in a unit of the Soviet Armed Forces.

At my urgent request I was accepted as one of the candidates for the Soviet space program. I passed the tests and, as you see, have become a space pilot. I went through the training program drawn up by our scientists. The President of the Academy of Sciences has described it in detail. The training was successful, I studied the machines and equipment well, and was ready for space flight.

I am very happy and boundlessly grateful to our Party and our government for entrusting this flight to me. I carried it out in the name of our country, in the name of the heroic Soviet people, in the name of the Communist Party of the Soviet Union and its Leninist Central Committee.

I felt very well before the flight. I was fully confident of its successful outcome. Our machines and equipment are very reliable and I and all my comrades, the scientists, engineers and technicians, never doubted the success of the undertaking.

During the flight I also felt fine.

During the boost stage for orbiting, the excess loads, vibration, noise and other factors of space flight did not act on me oppressively. I was able to work fruitfully according to the program of the flight.

After orbiting, when the carrier rocket was separated, weightlessness appeared. At first the sensation was rather unusual, even though I had previously been subjected to brief spells of zero-gravity. But I soon grew accustomed to the strange state, adjusted myself to it and continued to carry out the program. In my own subjective opinion, weightlessness does not affect the working ability of the body or its physiological processes.

Throughout the whole period of the flight I conducted fruitful work according to the set program. In flight I ate and drank, I maintained constant radio communication with the earth through several channels, both by radio-telephone and telegraph, observed the environment, looked after the work of the spaceship's equipment, reported to the earth and recorded my observations and other information in the log journal and on magnetic tape. I felt very well and worked normally during the whole period of weightlessness. Then the command for descent was given according to the flight program. The vehicle was properly orientated in space, the braking system was switched on and the speed dropped. I returned to earth and was happy to meet our Soviet people. The landing took place in the designated area.

I would like to describe what I saw.

The earth can be seen very well from the height of 175-300 kilometers. The surface looks much as it does when we see it from jet planes at high altitudes. Big mountain ranges, big rivers, big forests, shorelines and islands can be seen clearly. Clouds covering the earth and their shadows can be observed very well. The sky is pitch-black. The stars look brighter and clearer against the background. The earth is surrounded by a blue halo. It can be observed very well in the direction of the horizon. The color of the sky merges

very gradually and beautifully from a delicate light-blue, through ultramarine, dark-blue, and violet, and finally into inky black.

On emerging from the shadow the sun shone through the earth's atmosphere and the halo was of a somewhat different color. At the very horizon, close to the surface, it was a bright-orange which then passed through all the colors of the rainbow to ultramarine, blue, violet and black.

The entrance into the earth's shadow is very rapid. It grows dark at once and nothing can be seen. Probably the vehicle was passing over the ocean at that moment. If it had been passing over big cities I would probably have seen their lights. The stars shine very brightly.

The emergence from the earth's shadow was also very rapid and sudden.

As I was specially trained, I endured the effects of space flight very well. At present I feel fine.

I am very grateful to our Soviet designers, engineers and technicians, to the whole Soviet working people, who created that wonderful ship *Vostok*, its wonderful equipment, and the powerful carrier rocket which orbited the enormous ship.

I am boundlessly happy that my beloved Motherland is the first in the history of mankind to penetrate into outer space. The first airplane, the first sputnik, the first spaceship and the first manned flight in space are all milestones on my country's great road towards mastery over the mysteries of nature. Our people are being guided confidently towards this goal by the Leninist Communist Party.

At every step of my life and work, at the trade school, the technical institute, the aviation club and the Air Force school, I constantly felt the solicitude and care of the Party of which I am a member. I should like to note especially the loving human concern displayed in the Soviet Union towards ordinary people on the part of the Central Committee of the Communist Party, the Soviet government, and our beloved Nikita Sergeyevich Khrushchev. Only a few minutes after landing on our Soviet soil I received a heartfelt telegram of congratulations from Nikita Sergeyevich, his congratulations on the successful completion of the space flight. We have dedicated our flight to the heroic Soviet people, our government, our own Communist Party and its 22nd Congress.

We plan to fly often and look forward confidently to the real conquest of outer space. We always rejoice at the achievements scored by other countries in the development of science and we shall be happy to welcome the cosmonauts of other nations in outer space and wish them success in the peaceful exploration of space. We wish to cooperate with them in the peaceful use of outer space.

Personally I want to fly a lot in outer space. I liked it. I want to fly to Venus, to Mars, to do some real flying. (*Applause*)

**Statement by N. M. Sisakyan***

Man has always striven to explore and conquer outer space. This striving has given rise to folk legends and bold dreams. There is a Greek myth that tells us how Icarus, son of Daedalus, rose into the air on wings joined together by wax. He flew too near the Sun, and as the wax joints of the wings melted he fell back onto this planet. The bold dream of such flight continued to agitate the creative mind of man and serve as a source of search for new ways of conquering the Universe.

Balloons, planes, rockets and artificial earth satellites soared into the skies. Man acquired wings joined together by that strongest alloy, the laws of science, which not only permit human beings to remain firmly on earth but also to open the road to outer space.

Today we are marking an event of historic significance, the world's first flight of man in outer space. In this connection the elaboration of the methods of selecting and training a cosmonaut merit special mention.

The vocation of space pilot is a new trade which has come into being for the first time in history. The Soviet space pilot embodies the bravery of Alexander Matrosov, the valor of Dzhalil, the fortitude of Zoya Kosmodemyanskaya, and the iron will of a man brought up by Lenin's great Party.

Such is the astronaut grown under the conditions of Soviet life. Science has armed him with the requisite knowledge and the stamina to withstand the rigors of space flight. The selection of people physically fit for space flight and their scientifically con-

*Norair M. Sisakyan, born in 1907, is a biochemist, a member of the Academy of Sciences of the Armenian SSR and a Corresponding Member of the USSR Academy of Sciences. Since 1939 he has worked at the Institute of Biochemistry.

ceived special preparation and training were all novel problems. In tackling them, the scientists proceeded from the peculiarities of space flight, from the results of the many previous biological experiments, from the knowledge of the conditions of a man's stay and work in the cabin of a spaceship, and from the response an astronaut was likely to show during flight. Naturally, a would-be astronaut could only be an absolutely healthy man possessing a high level of intellectual development and technical knowledge, a man with a strong will, able to make instantaneous well-motivated decisions in a strained situation, to realize them immediately, and to evaluate the situation quickly and unerringly.

The selection procedure included a thorough examination of would-be astronauts in a clinic. Besides, use was made of special techniques of investigation which made it possible to determine fully the functional potentialities of the human organism and its adaptability to adverse environmental factors. The tests were made on centrifuges, vibration-test stands, heat chambers, depression

Khrushchev and Gagarin looking over the newspapers.

chambers, in conditions of sustained isolation and motorial restraint in silent chambers — facilities which completely shut out external stimuli (for example, sound, light, etc.).

Special emphasis in the selection procedures was placed on psychological investigations. More thorough investigations were made in the course of preparation and training so that a would-be astronaut could be finally cleared for flight. The preparation course included theoretical subjects dealing with the tasks to be accomplished in flight and training in the skills necessary for the space pilot to operate the cabin equipment and scientific instruments.

Every astronaut acquired a good knowledge of many special subjects related to rocket flight dynamics, space physics, and the effects of flight factors on the human organism. Naturally, the physical fitness of an astronaut was of primary importance in the pre-flight training. Physical training was purposeful. Use was made of techniques and facilities employed in regular physical-training exercises so as to perfect the physical qualities essential to a man in space flight. The principal objective was to raise his resistance to acceleration, to work out and perfect body control and fine coordinated movements. Measures were taken to improve his ability to withstand sustained physical stress without any drop in his efficiency and to build up his will.

A good deal of attention was devoted to special exercises. Their principal aim was to allow the astronaut to get accustomed to the conditions likely to arise in space flight. In other words, space flight was simulated as far as possible in the ground laboratory and on aircraft.

This portion of training was perhaps the most important and the most difficult.

Thus, the training of an astronaut for space flight was an involved scientific problem. However, for all its complexity and unusual difficulty, it was, as we can see, solved successfully.

It is with great joy and pride that we extend congratulations today to our dear compatriot Yuri Alexeyevich Gagarin, the world's first astronaut, a man who accomplished an exploit with no parallel, an exploit of world historic significance.

The way to this exploit was paved by the collective heroism of our scientists, factory workers, engineers and technicians, by

the selfless endeavor of our people under the leadership of the Communist Party of the Soviet Union.

The trail to space has been blazed. Tremendous work has been done, and a great victory has been won. New and broad vistas have been opened up to our science: man must not only fly into space but also establish himself there and put the universe under his control.

### Statement by V. V. Parin*

Preparation for the first manned space flight called for a considerable creative effort on the part of a large body of medical experts, physiologists, biologists, and psychologists.

Before the first human astronaut went in to space, a considerable amount of work had been done when the first Soviet sputniks were launched, carrying dogs, small animals and other biological subjects. These experiments had brought in extremely important information about the effects of space flight on living beings and made it possible to work out a system of scientific medical observation. These investigations enabled us to choose the most reliable and effective methods for studying and recording physiological functions and — the chief thing — for elaborating systems ensuring safety in flight and the recovery of the spaceship.

The scientists evolved special apparatus for automatically and continually supervising the physiologically important factors of environment and the organism's functional reactions. As is known, this apparatus was successfully tried out aboard the sputnik-spaceships on previous cosmic flights.

In this manner the way was paved, medically and biologically, for the forthcoming manned space flight.

Still, the task of the team that got the astronaut ready was a thorny one, without precedent in the past. However, despite its complexity it was considerably facilitated by the wonderful creative work of the astronaut himself, who became a real research worker and co-author in the common effort of a large team of scien-

*Vasili V. Parin, born in 1903, is a Member and Academic Secretary of the USSR Academy of Medical Sciences, and Director of the Institute of Normal and Pathological Physiology in Moscow. He has written a number of works on the physiology of the cardiovascular system.

tific workers. The elaboration of methods for objectively supervising the state of the human being was a special task. The scientists succeeded in working out a composite system for supervising the state of physiological functions, especially breathing and blood circulation, both before the take-off and during the flight itself.

The problem of training the astronaut before the take-off fell into a category of its own. Intensive medical supervision, a special diet and systematic investigation in ground laboratories simulating flight conditions — all guaranteed a unity and sequence in obtaining extremely valuable scientific data and also enabled us to derive the necessary points of departure for further analyzing phenomena characteristic of the reactions of the human organism while in flight.

The records of action potentials of the brain and muscles, detailed electrocardiographic and vectorcardiographic investigations and many other studies provided the required volume and depth to the watch kept on the health of the astronaut immediately before take-off. Concurrently, he was kept under constant medical and psychological surveillance, and biochemical and immunological tests were made as well as tests to ascertain his nervous and emotional condition.

Throughout his flight Yuri Alexeyevich Gagarin was under continuous medical supervision. In addition to the messages he regularly radioed back about his condition, the physicians and physiologists employed radio telemetry systems to keep records of the heartbeat and respiration of the first man in space.

The extensive experience accumulated by biological telemetry —a new science embodying the latest achievements of medicine and electronics—was placed in the service of mankind on April 12, 1961. It is hard to overestimate the role of objective biotelemetry data in assuring the safety of that outstanding flight. Built into the space suit of the astronaut were simple and convenient sensors which converted the physiological parameters—action potentials of the heart, pulse oscillations of vascular walls, and respiratory movements of the chest—into electric signals. Suitable amplifiers and measuring systems fed into the radio channels the impulses that characterized respiration and blood circulation in all stages of the flight.

In accordance with the preliminary data obtained from the telemetered records, Gagarin's flight proceeded most successfully from the medical point of view. Pulse rate and respiration during the powered leg of the flight and descent changed approximately as much as during the many pre-flight tests. Heartbeat and respiration decreased to normal when the astronaut had entered the weightless state.

Thus, the first practical application of biotelemetry to medical surveillance during a manned space flight proved most successful. This is an indication that our scientists working in this field have been following the right path, which promises further successes.

In conclusion, it should be noted that history's first manned space flight has brought in extremely valuable data about a man's condition in space and has confirmed the forecast of Soviet scientists not only about the possibility of manned space flight, but also about the ability of man to preserve his creative functions and diverse work activity there.

A great role in this accomplishment was played by the scientists and workers; a great and heroic role was played by the remarkable Soviet man Yuri Gagarin, his friends, his wife and his relatives.

### Statement by Y. K. Fyodorov*

What you have heard here is only the first account of Y. A. Gagarin's flight. Full reports and other scientific materials will be published later.

All those present here will remember to the end of their days this meeting with Yuri Alexeyevich Gagarin, the first cosmonaut. The world admires his courage and expresses profound respect for his skill, for the way in which he brilliantly coped with the hitherto unknown and difficult task of the first flight into outer space.

Though Yuri Gagarin was all alone in outer space, his exploit personified the vast efforts of a large team of factory workers, engineers and scientists who designed the spaceship and made it fly.

*Yevgeni Konstantinovich Fyodorov, born in 1910, is a geophysicist. Since 1955 he has been Director of the Institute of Applied Geophysics of the Academy of Sciences of the USSR.

When the first Soviet sputnik was orbited, some people abroad, including perhaps some of you, representatives of the Western press present here, were of the opinion that this was a result of an individual isolated technical achievement of the Soviet Union. Today no one supports this idea. During the short period which has elapsed since the first sputnik's flight, it has become clear to all that the Soviet Union's achievements in outer space are a natural stage in the development of the socialist country's science and engineering.

The Central Committee of the CPSU, the Presidium of the Supreme Soviet of the USSR and the USSR Council of Ministers, in their appeal, stressed that the Soviet people regard this victory in space exploration not only as their own achievement, but as an achievement of all mankind.

"We are happy to place it at the service of all nations, for the sake of progress, happiness and the good of all people on earth. We place our achievements and discoveries not at the service of war but at the service of peace and the security of the peoples." You probably remember that the orbiting of the first sputnik did not induce the Soviet Union to claim any special rights in outer space. The landing of a Soviet pennant on the moon did not lead to the securing of any lunar territories for the Soviet Union.

Our scientists report on the results they have attained at numerous international conferences, and discuss them with their colleagues from all countries of the world. At this very moment, a group of Soviet scientists including Academician Blagonravov are taking part in a scientific session of the international commission of space research, all of whose participants are rejoicing with us over this great new victory won by human genius.

And with this first flight of man into outer space, the Soviet people also contribute to the treasure house of mankind's scientific achievements.

The present rate of scientific and technical progress is remarkable. It should, however, be noted that this rate will gain even further momentum.

The thoughts of scientists are centered on further flights into outer space, on investigations of the moon and the planets, on delving into the innermost secrets of the structure of matter, on the fundamentals of the vital processes. And at the same time we dis-

Press conference at the Scientists' Club, Moscow.

tinctly see how much disorder there still is on our earth. Is it not a disgrace to mankind that people are still starving in some areas of our planet? This is a bitter reproach to those who ravaged and ruthlessly exploited and in some places to this day continue to exploit countries which are backward in their development.

As he was flying over Africa, Comrade Gagarin saw the Congo where only recently Lumumba, the valiant champion of the happiness of the Congolese people, was heinously murdered.

Soviet scientists know that such a state of affairs on earth causes anxiety among honest people throughout the world. The development of science and engineering opens up unlimited opportunities for mastering the forces of nature and it is our job, our common concern to utilize them for the well-being of man. To achieve this, it is necessary above all to ensure peace.

Today as we celebrate the new victory of man's genius, we Soviet scientists ask that all of you, representatives of the press, and especially representatives of the Western press, bring home to your readers, bring home to all the people on earth, the solemn appeal of the Communist Party of the Soviet Union and the Soviet Government to the whole world — the appeal to all people, irrespective of race or nationality, color, religious creed or social status, to spare no effort in securing a lasting peace. A real and speedy road to a lasting peace has been known for a long time: this is general

and complete disarmament under strict international control. The accomplishment of this basic task would make it possible for all peoples on earth to use their energy for space research as well as for other endeavors really worthy of man.

### Academician A. N. Nesmeyanov Replies to Questions

A number of notes ask whether there were any prior attempts to send a man into space. Incidentally, they refer to reports in the foreign press.

My answer is that no such attempts were made. Yuri Alexeyevich was the first, and his attempt was crowned with success.

Here is another question. For a long time scientists have differed as to whether it was really necessary to send a man into space. Does this concrete example prove that there was such a necessity?

Of course, if we were content with photographs, let us say, for instance, of the reverse side of the moon, then perhaps the answer would be that it was not necessary. However, the very presence of numerous foreign correspondents here in Moscow proves that photographs are not enough and people prefer to see things with their own eyes.

Then there is this question: Nikita Sergeyevich Khrushchev in his speech said that Yuri Gagarin's flight was the first Soviet swallow in outer space. When can the next one be expected? And what is the explanation of the Soviet Union's lead over the United States in space research?

Probably there are many reasons, as is the case with every complex phenomenon. Remember that Tsiolkovsky also lived in the Soviet Union. He was the first, and this was in pre-revolutionary Russia, to advance the theory of space flights. However, I consider that the main reason lies in the possibility of organizing scientific-technical work in a socialist state with much greater expediency than in a society founded on private property where there are numerous conflicting interests. Let's restrict ourselves to these two reasons.

### Yuri Alexeyevich Gagarin Replies to Questions

I have received many questions on how the descent took place. Allow me to reply to all of them at once.

The technique of landing in our country was elaborated in different versions, including the parachute version. The following system was used in this flight: the pilot was in the cabin, the descent was successful showing great efficiency and the excellent operation of all the landing systems.

QUESTION: Will the photos of the earth's surface taken from from the *Vostok* be published?

ANSWER: The *Vostok* did not have a camera or photographic device; no photographs were taken and hence there is nothing to publish.

QUESTION: Were you particularly hungry or thirsty during the flight?

ANSWER: I did not feel any special hunger or thirst during the flight. When it was time to eat according to the program, I had the very same feeling as I would here on earth.

QUESTION: When were you told that you were the first candidate?

ANSWER: I was informed in good time that I was the first candidate. I had plenty of time to prepare thoroughly.

QUESTION: What is your appraisal of the role of radio communications in this historic flight? How is a voice from earth heard in outer space?

ANSWER: I appraise very highly the role of radio communications during this flight. I had the opportunity to be in constant touch with the earth, to receive orders, to transmit information from the ship on the operation of all the systems, to transmit observations, to feel the constant support of our people, the government, the Communist Party, to know that I was not alone during the flight.

QUESTION: Did the ground team arrive before or after the landing?

ANSWER: The landing and the arrival of the ground team took place almost simultaneously.

QUESTION: What is your weight?

ANSWER: Before the flight I tipped the scales at 69.5 kilograms (153 pounds). This is my present weight as well.

QUESTION: What was the length of descent?

ANSWER: The length of descent is shown by its duration. The braking installation was switched on at 10:25, and the landing took

place at 10:55. The distance, accordingly, was several thousand kilometers.

QUESTION: Did you make preliminary flights on ballistic rockets?

ANSWER: No, I did not.

QUESTION: If you, a family man, the father of two children, were sent into space, then does this mean that both the government and you had confidence in the favorable outcome of the flight?

ANSWER: In this question I would like to replace the word "sent" with the word "entrusted." And I am very glad and proud of this trust. And as far as confidence that everything would operate smoothly and the flight would be successful is concerned, nobody had any doubts whatsoever — neither our government, our scientists, our engineers, nor I myself.

QUESTION: What did you eat during the flight? Was it ordinary food or something specially designated for nourishment under conditions of weightlessness?

ANSWER: It was special food prepared by the Academy of Medical Sciences.

QUESTION: Did you take with you into outer space any mementoes such as photos of your dear ones, or any talismans?

ANSWER: I can assure you that I do not believe in any omens and talismans, or other such things. I had no photos with me because I knew for certain that I would return to earth and see my near and dear ones with my own eyes on earth.

QUESTION: Can the spaceship or any part of it be used again?

ANSWER: This question is more within the competence of our technicians and engineers. However, I think that I would not be wrong in saying that the entire spaceship and its equipment could be used for another flight into outer space.

QUESTION: You reported that passing over South America your flight was normal and you felt well. As an inhabitant of South America I would like to ask you if our continent is beautiful from the altitude of space flight?

ANSWER: Very beautiful.

QUESTION: Yesterday you said that your fellow space pilots were ready to take part in a new space flight. How many of them are there? More than a dozen?

ANSWER: Our country is training space pilots in accordance with its space exploration program. I think there are enough men to carry out serious space flights.

QUESTION: Did you carry out the entire program drawn up by the scientists? Could you have carried out a larger program without difficulty?

ANSWER: I carried out my entire program. As to the other part of the question, I think the program was drawn so that it could be fulfilled, and I did everything I had to.

QUESTION: Do you think that a flight along a similar orbit lasting several hours or even days would be of any physiological or psychological inconvenience to the pilot?

ANSWER: Judging by how I felt in orbit I would conclude that, subjectively speaking, I could have remained in flight much longer than I actually did.

QUESTION: Did your flight serve to confirm you in your political convictions? Does it confirm the idea expressed by you that it is necessary to achieve total and controlled disarmament? If so, why?

ANSWER: I find it difficult to add anything to that question and I fear that I cannot put it as well and as vividly as Academician Fyodorov did. I think he gave a complete answer to this question.

QUESTION: Did the actual conditions of your flight differ from those that you imagined? If they did, in what way?

ANSWER: In one of his books K. E. Tsiolkovsky gave an excellent description of the factors involved in space flight, and the factors I encountered hardly differed from those described by him.

QUESTION: Could you describe your feelings when you returned from space to your native soil?

ANSWER: It is hard to express the feelings I had at the time. They were joy, pride and happiness. Happiness because I had fulfilled the task entrusted to me, because the flight had been carried out by the Soviet Union and its scientists, because our foremost science had made another step forward.

QUESTION: What are your wages? Did you receive any special reward for the flight?

ANSWER: My wages, like those of all Soviet people, are quite sufficient to satisfy my needs.

I have been awarded the lofty title of Hero of the Soviet Union. It is the highest award.

QUESTION: Do you think that you will fly a second time or will it be someone else?

ANSWER: I have already reported to the Party and the government that I am ready to carry out any new task.

I have received the title of Space Pilot of the USSR, which makes me eligible for flight into space. I shall be happy and grateful if I am entrusted with the second flight. But I think that we have many space pilots who would like to carry out that flight.

QUESTION: You said that you saw the earth well. Does this mean that you looked through a window of the spaceship or had a color television camera?

ANSWER: I saw it through a porthole in the ship.

QUESTION: When will another flight into space be carried out?

ANSWER: I suppose a flight will be carried out by our scientists and cosmonauts when the time comes.

QUESTION: Will you be the chairman of the cosmonauts' union?

ANSWER: All I can say is that it doesn't depend on me. If I am elected I will.

QUESTION: Could you have traveled to the moon on the *Vostok* with the present program?

ANSWER: The ship *Vostok* was not designed for flight to the moon. Special ships are being created and will be built for that.

## COMMENTS ON THE FLIGHT

### Statement and Appeal by Leaders of the USSR

*The following joint statement and appeal was issued by the leading bodies of the USSR on April 12, 1961, and published in all Soviet papers on April 13. It is entitled: "To the Communist Party and the Peoples of the Soviet Union! To the Peoples and Governments of all Countries! To the Whole of Progressive Mankind! Appeal of the Central Committee of the Communist Party of the Soviet Union, the Presidium of the USSR Supreme Soviet, and the Government of the Soviet Union."*

A great event has occurred: man has made a space flight for the first time in history....

An orbital spaceship, *Vostok*, with a man on board, took off on April 12, 1961, at 9:07 A.M., Moscow time, flew around the globe and returned safely to the sacred soil of our country, the land of the Soviets.

The first person to penetrate into outer space is a Soviet man, a citizen of the Union of Soviet Socialist Republics!

This is an unparallelled victory of man over the forces of nature, the greatest achievement of science and engineering, a triumph of human thought! Manned space flight has begun.

The genius of the Soviet people and the vast power of socialism are embodied in this exploit, which will go down in history.

With feelings of great joy and legitimate pride the Central Committee of the Communist Party, the Presidium of the USSR Supreme Soviet and the Soviet Government note that this new era in the progressive development of humankind has been opened by our country, a country of victorious socialism.

Tsarist Russia with its backwardness could not even dream of accomplishing such feats in the struggle for progress or in competing with more technically and economically advanced countries.

By the will of the working class, by the will of the people inspired by the Communist Party, led by Lenin, our country be-

came a mighty socialist power and achieved unprecedented heights in the development of science and technology.

When the working class took power into their hands in October, 1917, many people, including those who were honest, doubted whether the working class would be able to govern the country and to preserve at least the achieved level of development in the economy, science and engineering.

The working class, the Soviet collective farm peasantry, the Soviet intelligentsia, the entire Soviet people are now demonstrating to the whole world their remarkable success in science and engineering. Our country has taken the lead over all other states in the world and is the first to blaze the trail into outer space.

The Soviet Union was the first to fire an intercontinental ballistic rocket; it was the first to launch an artificial earth satellite; it was the first to send a space probe to the moon; it created the first artificial satellite of the sun; and it dispatched a spaceship towards Venus. Soviet orbital spaceships with living creatures on board carried out flights in space and returned to earth one after another.

Our victories in the conquest of outer space are crowned by the triumphant flight of a Soviet man in a spaceship around the earth.

Honor and glory to the working class, the Soviet peasantry, the Soviet intelligentsia, the whole Soviet people!

Honor and glory to the Soviet scientists, engineers, and technicians, the creators of the spaceship!

Honor and glory to the first cosmonaut, Comrade Yuri Alexeyevich Gagarin, the pioneer of space research!

The honor of being the first to penetrate into outer space has fallen to us, the Soviet people, who are building communism. We regard the victories in space exploration as being not only the achievements of our people, but of the whole of mankind as well. We gladly place them at the service of all peoples in the name of progress, happiness, and the well-being of all people on earth. We place our accomplishments and discoveries at the service of the peace and security of the peoples, not at the service of war.

The development of science and technology presents boundless opportunities for the mastering of the forces of nature and their use for the good of man. For this, peace must first of all be ensured.

On this great occasion we once again address to the peoples and governments of all countries our appeal for peace.

Let all people, irrespective of race or nationality, color, religious creed or social status, spare no efforts to ensure a lasting world peace. Let us put an end to the arms drive! Let us carry out general and complete disarmament under strict international control! This will be a decisive contribution to the sacred cause of peace.

The glorious victory of our country inspires all Soviet people to new deeds in the upbuilding of communism.

Forward to new triumphs in the name of peace, progress, and the happiness of humanity!

The Central Committee of the Communist Party of the Soviet Union,
The Presidium of the USSR Supreme Soviet,
The Council of Ministers of the Union of Soviet Socialist Republics

The Kremlin, Moscow
April 12 ,1961

## Scientific Analysis of Man's First Space Flight

*The following article analyzes the basic factors which went into the construction, manning, and launching of the spaceship Vostok on April 12, 1961. The article appeared in all Soviet papers on April 25.*

On April 12, 1961, the Soviet Union carried out the first manned space flight in history. The spaceship *Vostok* carrying Yuri A. Gagarin, space pilot of the USSR, was boosted into orbit as an artificial earth satellite. The sputnik-spaceship weighed 4,725 kg exclusive of the final stage of the carrier rocket. According to final data obtained by processing all the measurements, the perigee of the orbit was 181 km, and the apogee 327 km, while the orbit itself was inclined at 64°57′. After its orbital flight the sputnik-spaceship landed safely in a predetermined area of our country.

The first space flight of a Soviet man ushers in an era of man's direct breakthrough into the cosmos. It is a major landmark in the history of civilization. This flight was the fruit of a sweeping, purposeful program of work conducted in the Soviet Union to conquer space.

The great dream of K. E. Tsiolkovsky, the father of space travel, is coming true: "Man will not remain everlastingly on earth. In the race for light and space he will probe, timidly at first, beyond the atmosphere, and then he will conquer all of circumsolar space."

Throughout many millennia the inquisitive brain of man has been striving to reach into the depths of the universe. This search is evidence of man's unquenchable thirst for knowledge, his desire to fathom his place in the universe and learn how to govern the laws of nature.

Modern science commands a large arsenal of means for cosmic exploration. The distances already accessible, thanks to these means, run into astronomical figures.

The cosmos is a world of stars, stellar associations and galaxies, of which our solar system is a member. Equipped with the teachings of dialectical materialism, advanced science asserts that there exist a multiplicity of worlds in which the evolution of life, the supreme form of matter, is possible. The genesis of life in the universe is by no means an exceptional phenomenon. One cannot concretely specify where, either within or beyond our solar system, life exists today, or what form it has assumed, but it definitely exists.

The appearance of man on earth marked the beginning of a qualitatively new stage in the earth's development as a planet. As he grew to understand natural laws, man began to remake the earth and to equip himself with mighty means to harness nature. From the time of the first stone ax, man has now risen to a height which has enabled him to launch the first space flight.

Through flights in space, man can now directly explore a realm that is new to him. We know that entry into any new domain results in discoveries which often cannot be foreseen. For example, it was only the first sputniks that enabled us to discover the earth's radiation belts, something which essentially changed our notions of circumsolar space and made us aware of the radiation hazard to be faced in space flights.

Today it is hard to estimate the full significance of space flights and the future prospects they open up. One thing is clear, however, and that is that man's breakthrough into space will immeasurably extend the horizons of our knowledge and will enrich science and culture.

The Gagarins — Yuri, Valentina, and two-year-old daughter Lena. Galya, the younger danghter, was born in March.

Every year sees an increase in the rate of advance of modern science and technology. Today we are witnessing achievements which it was impossible to imagine fifteen or twenty years ago. And there is every reason to believe that science and technology — and the techniques of space flight, in particular — will proceed at an increasingly rapid pace.

We can already anticipate that in the immediate future space vehicles will be used to solve a number of practical problems. Weather service and ice reconnaissance, the relaying of television and radio broadcasts, a sweeping program of extra-atmospheric study — these are just the first steps. They will be followed by manned flights to the moon and to the other planets of the solar system, the creation of populated interplanetary stations, and man's gradual mastery over life in space. For the more remote future, there are possibilities — which now seem fantastic — of establishing contact with other worlds.

One of the principal problems among the vast number that confronted Soviet scientists and designers in preparing for and carrying through the first manned space flight was that of ensuring the safety of a man's flight and return to earth. To solve this problem, elaborate plans had to be developed and many experimental launchings made.

After due consideration of the various possibilities for the first manned flight, the most expedient method was found to be flight in an orbital spaceship, since this would open up a direct road for man into outer space. Flight along a ballistic trajectory, which is not, in fact, a space flight, and which is designed primarily for publicity, was rejected. It is no accident, therefore that from the very outset Soviet scientists and designers have been directing their efforts toward the development of artificial satellites and spaceships of great size and weight. Such was the fundamental line of the development of space flights in the USSR. It was only in this way that the historic task of sending a man into space could be carried out. From the day when the second Soviet sputnik carried a test animal, the dog Laika, to the launching of the orbital spaceship *Vostok*, Soviet scientists and designers have followed this line unswervingly.

They had to obtain as much information as possible on the structural properties of space vehicles and their instruments, and to test the reliability of various control systems in flight. A fundamentally new task was to create systems of orientation for orbital spaceships and to solve the problem of their return to earth. In preparing for a manned flight, it was also necessary to ensure the maintenance of normal pressure, temperature, composition of the air, and other conditions vital to man's functioning.

Apart from solving fundamental problems of space physics, the scientific investigations of outer space provided necessary data on the effect of various types of radiation on the living organism under space flight conditions and on meteorite danger in flight. On the basis of the data obtained, measures were taken to protect orbital ships against radiation.

The wealth of experimental data gathered as a result of the flights of the first Soviet orbital ships and the development of systems ensuring their safe return to earth enabled Soviet scientists

and designers to embark upon the creation of a ship for a man's flight into outer space. As a result of large-scale, strenuous work the spaceship *Vostok* was built. In March, 1961 the last two control launchings of this ship were made. During these launchings a dummy was placed in the pilot's chair, and the cabin also carried two test animals, the dogs Chernushka and Zvyozdochka.

The flights were made in accordance with the program designed for the ship's first flight with a man aboard. Both flights proceeded strictly in accordance with the set program and confirmed the high degree of reliability of the design and the operating systems of the ship.

The careful preliminary testing of the orbital ship *Vostok* ensured complete success of its very first launching with a cosmonaut aboard, which took place on April 12, 1961.

### Design of the Spaceship *Vostok*

The design of the spaceship *Vostok* is based on what was learned from the launchings of the first Soviet orbital space vehicles.

The satellite spaceship consists of two main parts: the pilot's capsule, with its accommodation for the pilot, the life-sustaining installations and the landing system; and the instrument section containing the instruments working during the orbital flight and the vessel's retro-engines.

After reaching orbit, the spaceship separates from the last stage of the carrier rocket. In flight its instruments work according to a special program which includes the taking of orbital measurements, the transmission of telemetric information and the television image of the pilot's two-way radio communications with earth, maintenance of the required temperature in the ship and air-conditioning in the pilot's cabin. The instruments are controlled automatically by means of programmed devices in the space vehicle or, if necessary, by the space pilot himself.

The program of the first manned flight was devised for one revolution around the earth. However, the design and equipment of the space vehicle allows for longer flights.

When the flight program is completed, a special system orientates the vehicle in space for descent. Then, at a specific point in

Young Gagarin as a foundryman.

the orbit, the retro-engine is switched on, which reduces the vehicle's velocity to the calculated value. As a result, the vehicle enters into its descent trajectory.

The capsule containing the space pilot is decelerated in the atmosphere. The re-entry trajectory is chosen so that the decelera-

tion load on entering the dense layers of the atmosphere will be no greater than the loads permissible for man. When the capsule reaches a specified altitude, the landing system is switched on. The actual landing of the capsule takes place at a low speed. The vehicle travels some 8,000 km from the moment the retro-engine is switched on until the moment it touches the ground. The descent stage lasts approximately 30 minutes.

The shell of the pilot's capsule is covered with a heat shield which protects it from burning up during its flight through the dense layers of the atmosphere. The shell of the capsule has three portholes and two quick-opening hatches. The portholes are provided with heat-resistant glass, making it possible for the pilot to make his observations throughout the entire flight.

The space pilot occupies a jettisonable seat, in which he remains during the entire flight and which enables him to leave the vehicle should the need arise. The seat is inclined so that the load during the orbiting and re-entry stages acts on the pilot in the most favorable direction (chest to back).

In the first flight the pilot was dressed in a protective space suit ensuring the preservation of his life and working ability even if the cabin lost its airtightness in flight.

The satellite spaceship also carried the following systems:

instruments and equipment necessary for the vital functions of the human body (an air-conditioning system, a pressure control system, food and water, a system for removing the body's waste products);

flight control equipment and a system of manual control of the vehicle (the pilot's panel, an instrument board, a manual control system, etc.);

a landing system;

radio apparatus for communications with the earth;

an autonomous system registering the work of the instruments, the radio telemetric systems and various sensors;

a television system for observing the pilot from the earth;

instruments for recording the physiological functions of the body;

the retro-engine of the vehicle;

an orientation system;

a flight control system;
radio systems for orbital measurements;
a temperature control system;
electricity supply sources.

On the outside surface of the vehicle are mounted the control units, orientation elements, blinds of the temperature control system, and the antennae of the radio systems.

The pilot's cabin is much roomier than the pilot's cabin in an aircraft. The instruments in the cabin are designed to ensure the greatest convenience for the pilot in flight. From his seat the space pilot can perform all necessary operations connected with observation, communications with earth, flight control and if necessary, control of the vehicle without leaving his seat.

The frame of the pilot's seat carries:

a detachable back with braces to hold the pilot in position when catapulting and parachuting;

parachute systems;

catapulting and pyrotechnical devices;

an emergency store of food, water, and equipment and radio means for communication and direction finding for the space pilot to use after landing;

a space suit ventilation system and a parachute oxygen supply unit;

automatic operation of the seat.

The space pilot can land in the cabin of the vehicle. This method of landing was tested in the fourth and fifth Soviet satellite spaceships with test animals in the cabin. A variant is also provided for in which the pilot is catapulted in his seat from the cabin at an altitude of some 7 km and is landed by parachute. This variant was also tested in orbital spaceship launchings.

The air-conditioning system in the space vehicle maintains normal pressure and normal oxygen content, a carbon dioxide content of not more than one per cent, temperature at 15-22 degrees Centigrade, and a relative humidity of 30-70 per cent. Regeneration of the air — absorption of carbon dioxide and water vapor and injection of the necessary quantity of oxygen — is effected by means of highly active chemical compounds. The regeneration process is automatically controlled. If the amount of oxygen drops and the

concentration of carbon dioxide increases, a special sensor gives a signal which alters the operation of the regenerator. If an excess of oxygen is produced, a mechanism automatically reduces the amount of oxygen injected into the air of the cabin. The humidity of the air is controlled in a similar way.

A system of special filters is designed to purify the air in case of contamination by harmful admixtures resulting from the bodily functions of the pilot and the work of the instruments.

The required temperature is maintained by a special temperature control system. A specific feature of this system is the use of a constant-temperature liquid cooling agent to transfer the heat from the pilot's cabin. The cooling agent flows through the temperature control system to a liquid-gas radiator. The flow of air through the radiator is regulated automatically, depending on the temperature in the descending vehicle. Thus, the required temperature is maintained with great accuracy.

To keep the temperature of the cooling agent at the required level and to ensure the necessary temperature in the instrument section an automatic radiation heat exchanger with a system of blinds is placed on the outside surface.

In order to land in a designated area the vehicle must be carefully oriented in space before the retarding engine is fired. This is done by means of an orientation system. In the present flight one of the axes of the vehicle was orientated according to the sun. A series of optical and gyroscopic sensors act as the sensing elements in this system. Signals from them are fed to an electronic pack where they are transformed into commands governing the control systems. The orientation system ensures the automatic finding of the sun, adjustment of the vehicle accordingly, and its stabilization in the required position with great accuracy.

When the vehicle is orientated the retarding engine is fired at a specified moment. The commands for switching on the orientation system, the retro-engine and other systems are issued by an electronic program device.

The spaceship carries radiometric and radiotelemetric equipment for orbital measurements and control of the work of the instruments. Trajectory measurements and the reception of telemetric information during the flight are carried out by ground stations

in the Soviet Union. The data are automatically relayed along communication lines to computing centers where they are processed in electronic computers. As a result, orbital information is constantly available throughout the flight and it is possible to forecast the further motion of the ship.

The vehicle also carries a radio system "signal" working on a frequency of 19.995 mc/sec. The system serves for radio direction finding and transmitting part of the telemetric information. A television system transmits images of the pilot to the earth and makes it possible to carry out visual observations of his condition. One television camera transmits a full-face view and the other a side view of the pilot.

Two-way communication with the earth is ensured by a radiotelephone system working on short waves (9.019 and 20.006 mc/sec) and ultrashort waves (143.625 mc/sec).

The FM channel is used for contact with ground stations from a distance of 1,500-2,000 km. Communications in the short-wave channel with ground stations located in the Soviet Union can, the experiment has shown, be carried out from most of the orbit.

The radio-telephone system includes a tape recorder to record the pilot's speech in flight and subsequent reproduction and transmission when the vehicle passes over ground receiving centers. The space pilot is also provided with a key for telegraphic communication.

The instrument panel and pilot's dashboard in the cabin are designed to control the work of the main systems and to ensure, if necessary, manually controlled descent of the vehicle. The instrument panel carries a number of dials, light signals, an electric clock, and a globe which revolves synchronically with the vehicle's motion in orbit. The globe enables the pilot to determine his position in flight. The pilot's dashboard carries levers and switches which can operate the radio-telephone systems, regulate the temperature in the cabin, and also can switch on the manual controls and retarding engine.

In designing the spaceship special attention was paid to flight safety. The launchings of the first Soviet spaceships had confirmed the highly reliable work of their apparatus and equipment. Nevertheless, in the spaceship *Vostok* a number of additional measures

were taken to exclude the possibility of any accidents and to guarantee the safety of a manned flight. This was in full accordance with the basic task – the development of a craft which would enable man to penetrate with confidence into outer space.

In order to orientate the ship in the event that it must be steered by hand, the cosmonaut uses an optical orientation device to determine the position of the ship in relation to the earth. This optical device is installed on one of the portholes of the cabin. It consists of two annular mirror-reflectors, a light filter and a latticed glass. The rays travelling from the line of the horizon strike the first reflector and, passing through the glass of the porthole, reach the second reflector which directs them through the latticed glass to the eyes of the cosmonaut. If the ship's bearings in relation to the vertical axis are correct, the cosmonaut sees the horizon in the form of a circle in his field of vision.

Through the central part of the porthole the cosmonaut sees the part of the earth's surface directly below him. The position of the ship's longitudinal axis in relation to the direction of flight is determined by watching the "run" of the earth's surface in the pilot's field of vision.

With the help of the control units the cosmonaut can turn the ship so that the line of the horizon is visible in the orientation system in the form of a concentric circle, and the direction of the earth's "run" coincides with the course plotted on the latticed glass (chart). This will be proof of the correct orientation of the ship. The pilot's field of vision can be covered by the light filter or a blind, if necessary.

A globe installed on the instrument panel also makes it possible to ascertain the ship's bearings during flight and to predetermine the landing place if the braking device is switched on at any moment during the flight. Finally, the design of the ship allows for landing even if the braking device should fail – with the help of the natural frictional action of the atmosphere. The supplies of food, water, and regenerative substances, and the capacity of sources of electrical energy are calculated for a flight lasting up to ten days.

The design of the ship includes devices which prevent the temperature of the cabin from rising above a certain level in case its surface is heated over a protracted period, something which occurs during the gradual braking of the ship in the atmosphere.

## Medical-Biological Problems of a Manned Space Flight

In order to answer the question whether a manned space flight was possible and, if so, to guarantee its medical security, it was necessary to do the following things:

1. To study the influence of the factors of a space flight on the organism, and also to study possible ways and means of protecting the organism against the harmful action of these factors.

2. To develop the most effective methods of ensuring normal conditions for the life of a man in the cabin of the spaceship.

3. To work out the methods of medical selection and training of the members of the crews of spaceships, and also to develop a system of uninterrupted medical control of the pilots' health and capacities throughout the flight.

Each of the above questions entailed a large number of particular problems, on the study and solution of which specialists in the fields of physiology, hygiene, psychology, biology, clinical and professional medicine worked uninterruptedly over a period of ten years. Research was carried out in laboratories on earth, and during the flights of animals in rockets. The rich experience accumulated in the fields of applied physiology and medicine, particularly in aviation medicine and studies of underwater swimming, was taken into account. Wherever possible special stations were set up for the laboratory study of the action of space flight factors on the organism. The influence of various strains and the organism's reaction to them were studied in centrifugal machines which reproduced accelerations analogous to those occurring during the periods of boosting and recovery.

With the help of vibro-stands, thermal and vacuum chambers and similar units, the action of other factors on the organism was studied. However, the laboratory experiments, as a rule, were able to furnish information about only one of these factors at a time whereas during a real flight in a rocket these factors act simultaneously and in combination. Besides, the behavior of living organisms in the condition of weightlessness could not be studied in the laboratory. Therefore, the biological research carried out with the aid of rockets, beginning in 1951, was of considerably greater value in determining the influence of space flight conditions on the organism.

Final preparations for the space flight.

Several dozen experiments were made on animals which ascended to altitudes of up to 450 km in rockets. As a result, comprehensive scientific data were accumulated, describing the reaction of the physiological systems and the behavior of the animals (dogs, rabbits, rats and mice) at different periods of the flight. A careful examination of the test animals both during the flight and during a prolonged period of time after their return to earth enabled us to draw the conclusion that living organisms withstood the conditions of rocket flights to the upper layers of the atmosphere quite satisfactorily. The changes observed in some physiological functions during the flight were not of a morbific nature; quite often they disappeared while the experiment was still in progress, and did not reappear subsequently.

However, owing to the short duration of rocket flights there was no opportunity to study the biological effects of such impor-

tant factors of space flight as prolonged weightlessness and cosmic radiation. Therefore, the chance which arose in 1957 to use artificial earth satellites for biological experiments was an exceptionally important step forward.

The first such experiment was conducted on the second Soviet sputnik. It not only confirmed but augmented the data of previous biological experiments on rockets. It proved for the first time that a prolonged state of weightlessness, as such, does not violate the basic vital processes.

Biological experiments were continued on the first Soviet orbital spaceships. The program of this medico-biological research included a number of new problems. In addition to expanded and more thorough study of the influence of prolonged weightlessness on the organism, great emphasis was placed on the study of the transition from weightlessness to overstrain and vice versa, and of the biological effects of cosmic radiation.

Another important section of the program was the study of the special features of the operating systems which in future flights had to ensure normal conditions for man's functioning and guarantee his safe return to earth. As part of the planned program, diverse representatives of the organic world, from the simplest forms of life up to higher vertebrates, were placed on the first Soviet orbital spaceships.

The utilization of various species of animals and plants for experiments made it possible to study in great detail the influence of space flight conditions on the most diverse processes and functions of organisms. Data on the behavior and physiological functions of experimental dogs during flight were especially profuse. The behavior of the test animals was observed with the aid of a special TV system. An analysis of the data obtained showed that the animals not only fully retained their vital functions during conditions of protracted weightlessness and subsequent overstrain, but that no morbid symptoms appeared. Prolonged and careful study of the animals after flight also failed to reveal any deviation from the normal whatsoever.

Especially serious attention was devoted to detecting any possible effects of cosmic radiation during the flight of an orbital spaceship. Again, the most intensive study failed to reveal changes which could possibly have been caused by ionizing radiation.

The results of the medico-biological research conducted on orbital spaceships made it possible to come to exceedingly important and responsible conclusions. It was acknowledged that flights on orbital spaceships circling below the radiation belts around the earth are safe for highly organized members of the animal kingdom. The results of these biological experiments were used to solve the problems of safe manned flight. These, along with laboratory investigations, led scientists to the conclusion that man's flight into space will not be detrimental to his health.

### The Selection of the Cosmonauts

The first space flight could only be performed by a man who, realizing the tremendous importance of the task set him, had consciously and voluntarily agreed to devote all his strength and knowledge, and even perhaps his life itself, to the accomplishment of this outstanding exploit. Thousands of Soviet citizens, patriots of the most varied ages and professions, expressed the desire to make the flight into outer space. Soviet scientists were instructed to select the first cosmonauts from among the vast number of applicants on a rigorously scientific basis.

In the course of a space flight, man is subjected to the influence of a whole complex of environmental factors (acceleration, weightlessness, etc.) and a considerable nervous and emotional strain calling for the mobilization of all his moral and physical abilities. At the same time, the cosmonaut must retain a high degree of working ability, be able to orient himself under complex flight conditions and even, if need be, take part in controlling the spaceship. All this called for the highest qualifications in terms of the cosmonaut's health, psychic qualities, general background and technical proficiency.

The right qualifications for space flight are most likely to be found in pilots. Work as a pilot shows the extent of a man's nervous and emotional stability and will power, which are of particular importance in the first space flights. In the future, the range of persons participating in such flights will undoubtedly be broadened considerably.

In selecting the group of cosmonauts, interviews were held with a great many pilots who had expressed the desire to make a

space flight. Those who seemed best prepared were subjected to a careful clinical and psychological examination. Its purpose was to determine the subject's state of health, to reveal any latent deficiencies or low resistance to various factors he would encounter in the future flight, and to ascertain his general reactions to these factors.

The examination made use of a number of modern biochemical, physiological, electrophysiological and psychological methods and special functional tests which made it possible to assess the reserve capacities of the main physiological systems of the organism (investigations in the pressure chamber at considerable degrees of air rarefication, during abrupt changes in the barometric pressure, the breathing of oxygen at increased pressure, behavior in the centrifuge, etc.)

An important stage of the investigations was the series of psychological tests designed to select persons possessing an especially retentive memory, resourcefulness, active attentive powers that could be easily transferred from one object to another, and the ability rapidly to develop precise coordinated movements.

As a result of the examinations, a group was selected which set about carrying out the program of special instruction and training on special stands and devices which simulated, both on the ground and in the air, the conditions of a space flight. At the same time, the peculiarities of each individual's reactions to the simulated factors were ascertained.

A program of special instruction was designed to supply the cosmonauts with necessary information on the basic theoretical questions connected with the forthcoming flight, as well as to instil practical habits in the use of the equipment and instruments in the spaceship's cabin. This program provided for the study of the fundamentals of rocket and space technics, the design of spaceships, and special related problems of astronomy, geophysics and space medicine.

The program of special training and tests included: plane flight under zero-gravity conditions; training in the replica of the spaceship's cabin and on a special training device; prolonged stay in a specially equipped soundproof chamber; training in the centrifuge; and parachute jumps from planes.

In the course of the special training some problems to be encountered in manned space flight were also solved, specifically those connected with the feeding of the cosmonaut in flight, the construction of his space suit and the system of air regeneration.

During the plane flights the individual reactions of the cosmonauts during weightlessness and the transition from weightlessness to overstrain were studied. Also studied were maintenance of radio communication, the intake of water and food, etc. Answers to some important questions about man's possible behavior under space flight conditions were thus found.

It turned out that all the cosmonauts endured zero-gravity well. In addition, it was established that during the states of weightlessness lasting for up to 40 seconds they could normally receive liquid, semi-liquid and solid food, perform subtle coordinated acts (writing, purposeful movements of the hand), maintain radio communication, read and orient themselves visually in space.

Training in the replica of the spaceship's cabin and in the special training device was designed to enable the cosmonauts to study the equipment and instruments in the cabin, practice various versions of the flight task and accustom themselves to staying in the cabin of the actual spaceship. For this purpose a special training stand was created containing electronic devices which could cause the instruments to behave just as they would during real flight. The pilot too acted just as he would in space. Possible emergency situations that might arise during flight were also simulated, and the cosmonauts trained to react properly to them.

The cosmonaut's behavior was studied during protracted periods of isolation in a specially equipped soundproof chamber in order to determine his nervous-psychological stability in solitary, closely confined conditions in which many customary external stimuli were absent. In the course of this training, daily regimen and feeding simulated those of a real flight.

A wide range of special psychophysiological tests made it possible to single out those individuals who were the most accurate and precise in fulfilling assignments and whose nervous and emotional stability was greatest.

Tests were also conducted during the cosmonauts' training in the centrifuge and the thermal chamber, and those who withstood the tests best were also singled out.

Photo of Gagarin as a pilot.

During the course of air-drop training each cosmonaut had to make several dozen jumps. The physical training of the group consisted of planned instruction and setting-up exercises. The planned instruction was based on the individual features of each cosmonaut's physique. The setting-up exercises, conducted for an hour each day, were designed for general physical training. Physical instruction was directed towards improving the stability of the organism under the effects of acceleration, working out and perfecting the easy use of the body in space, and increasing the ability to endure protracted physical tension. Physical training was conducted under constant medical observation and combined exercises, games, diving, swimming, and exercises on special apparatus.

When the special training was completed, direct preparations were made for the forthcoming space flight. These preparations included study of flight assignments and maps of the landing area, instructions in piloting, the use of radio communication; study of the emergency equipment, its utilization after landing, study of the

direction finding system; training in a centrifugal machine wearing a space suit and bearing the maximum load that might be expected in actual flight; and long training in a model spaceship using all life-saving systems.

A group of men most qualified for space flight was picked from among the trainees, and Major Yuri Alexeyevich Gagarin was chosen in turn from that group to carry out the world's first manned flight into space.

### The Flight Itself

The spaceship *Vostok* took off at 9:07 A.M., Moscow time, on April 12, 1961.

During the entire boost stage, space pilot Gagarin maintained constant communication by radiotelephone with the flight center on earth. The cosmonaut felt very well during this section of the flight. He recorded precisely the changes in load and the stages of separation of the carrier rocket. The noise in the ship's cabin did not exceed that which is customary in the cockpit of a jet plane. Gagarin watched the earth through the portholes even during the boost stage.

The orbital flight, as well as the orientation and landing of the ship were effected automatically. If the necessity had arisen, however, the cosmonaut at his own wish or on command from the earth could have taken the control of the ship into his own hands, determined his location and made the landing in the selected area.

After the spaceship was injected into orbit a state of weightlessness set in. At first, Gagarin found this condition unusual but he soon accustomed himself to it. He felt fine throughout the entire period of weightlessness and retained full command of his capacities.

In accordance with the assignment and flight program he kept watch over the functioning of the spaceship's equipment, maintained uninterrupted communications with the earth by radiotelephone and telegraph, made observations through the portholes and the optical orientation device, sent reports back to earth, recorded observation data in his log book and on magnetic tape and took food and water.

The surface of the earth was clearly visible from a distance up to 300 kilometers. Coastal lines, big rivers, terrestrial relief,

forests, and clouds and the shadows from them were observed very well. As he was flying above the territory of our country, Major Gagarin saw the massive oblongs of collective farm fields.

The sky was pitch black. The stars looked brighter and clearer against it than they do from the earth. The earth has a very beautiful pale-blue halo, and on the horizon the colors change from a delicate light-blue through ultramarine, dark blue, violet, and finally to black sky. When emerging from the shadow, a vivid orange flash, which then passed through all the colors of the rainbow, could be observed at the earth's horizon.

At 9:51, the spaceship's automatic orientation system was switched on and, after the ship emerged from the shadow, it orientated the ship on the sun.

At 9:52, as he was flying near Cape Horn, cosmonaut Gagarin sent one his reports to say that he was feeling fine and that the ship's equipment was functioning normally.

At 10:15, the automatic program control device commanded the equipment to prepare for the firing of the braking rocket. At this moment the ship was on the approaches to Africa and another report on the progress of the flight was received from Major Gagarin.

At 10:25, the braking rocket was fired and the spaceship veered off the orbit of an earth satellite onto its descent trajectory.

At 10:35, the ship entered the dense layers of the atmosphere.

At 10:55, Moscow time, after carrying out the world's first manned space flight, the sputnik-spaceship *Vostok* landed in the designated area.

Since his return from space, Major Gagarin has been feeling well. No physical disorders have manifested themselves.

The first space flight in man's history, which Soviet cosmonaut Yuri A. Gagarin effected aboard the sputnik-spaceship *Vostok* has made it possible to draw the vastly important scientific conclusion that manned space flights are feasible. It showed that man could withstand normally the conditions of space flight, injection into orbit, and the return to earth. The flight showed that under conditions of weightlessness man retains full command of his capacities, can coordinate his movements and think clearly.

This journey into space provided extremely valuable information about the functioning in flight of the structural elements

and equipment of the spaceship. The correctness of the scientific and technical solutions on which the design was based was fully corroborated. The reliability of the carrier rocket and the perfect character of the design of the sputnik-spaceship were confirmed.

Henceforth, we have the means to effect manned space flights. *The first manned space flight ushers in a new, space era in human history.*

The time has come when projects may be realized that once seemed fantastic—extra-terrestrial scientific observatories and manned space flights to the moon, Mars, Venus, and the other planets of the solar system.

The new space era in human history is one which promises a stupendous extension of the domain of the life and activity of man. Man can now conquer circumsolar space.

## BIOGRAPHICAL NOTE

Yuri Alexeyevich Gagarin was born on March 9, 1934, in the Gzhatsk District of the Smolensk Region, which borders the Moscow Region of the Russian Federation. At that time his parents were collective farmers. Today, his father, who is 59 years old, works as a carpenter, and his mother is a housewife.

Yuri entered elementary school in 1941, but shortly afterwards he was forced by the Nazi invasion to suspend his schooling. After the war he resumed his education and in 1951 he was graduated with honors from a vocational school specializing in the metallurgical trades in Lyubertsy, a town outside Moscow. During the same period he also completed his course at a workers' evening secondary school.

Gagarin's older brother Boris recalls that even in his earlier school days, Yuri showed a marked interest in mathematics and physics, as well as in aviation.

In 1951, Gagarin entered a technical school in Saratov, a city on the Volga, and joined the Saratov Aviation Club. By June 1955, he had been graduated with honors and had also made his first independent airplane flight, as a result of an intensive course of study at the Aviation Club.

He then entered the famous Soviet Air Force School at Orenburg, and following his graduation in 1957, began service as a pilot in the Soviet Air Force. In 1960, he joined the Communist Party of the Soviet Union.

Yuri Gagarin's wife, Valentina, who is 26 years old, is a graduate of the Orenburg medical school. They have two daughters, Yelena, 2 years old and Galina, who was born in March, 1961.

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